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INTERNAL WAGE DETERMINATION: THEORY AND PRACTISE

by



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ABSTRACT

This study examines the subject of internal wage determination on two levels: theoretical and practical. This examination provides the needed framework for integrating theory and practise, the chief purpose of this paper.

Part one examines the major contributions made to the field of wage structure theory and selects one theoretical scheme for detailed study. The scheme selected provides the theoretical and conceptual base from which the study draws life.

Part two reviews the practical methods of internal wage determination and evaluates these methods in terms of the theoretical scheme outline in part one. The presentation of the current state of internal wage determination on the two levels allows the recommendation of an approach that integrates the concepts in the theoretical scheme and the procedures in the practical methods.

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CHAPTER I

INTRODUCTION

Nature and Purpose of the Study

While scholars think about wages, managers pay wages. This is not to say that managers do no thinking. He thinks, but differently from the theorizer. And while the scholars and the manager are searching for the answer to internal wage determination, the employee is busy thinking about the wages he receives. His thinking on wages differs from that of the scholar and the manager. He is not concerned with developing a theory, nor with reducing expenses. Rather, he is concerned with receiving a wage that (a) will allow him to maintain a certain standard of life, and (b) is relative to other employees in the same firm and others occupying a similar position in other firms. In other words, he wants to be paid fairly in relation to his fellow employees. Thus, management, in its thinking, must insure that an equitable internal wage structure exists.

In view of the fact that employees are keenly aware of unfair differentials in their pay, it is not surprising to note such phases as 'a fair day's pay', 'a just wage', or 'gross inequalities', in compensation discussions. The question of fairness is ever present even though there is no agreement on what the terms fair, just, or equitable mean. In fact, there are no absolute, objective, universally

accepted yardsticks on equity. Little agreement exists on what is being paid for, and therefore no agreement exists as to which factor should bear the greatest weight.

Thus, ethical considerations are ever present in the wage determination process. Because employees, employers, unions, groups, or individuals can identify, or at least imagine, inequalities in pay, management must concern itself with the problem of establishing and maintaining an equitable internal wage structure. Management must adopt a process of internal wage determination that will enable them to iron out any existing inequalities.

The problem of correcting inequalities, or establishing equitable differentials, has been addressed by both practitioners and theoreticians. According to Belcher,¹ there has been, in the past two decades, a gradual convergence of compensation theory and practice. For a considerable period of time, the policies and practices employed by wage and salary administrators appeared unrelated to wage theory. However, work in the behavioral sciences and the integration of such findings and economics by institutional economists is forging a bridge between theory and practice.

It is from the work of institutional economists on the problem of internal wage determination that this paper draws its life. Although the problem of a just wage dates

¹ D. W. Belcher, Wage and Salary Administration, (Englewood Cliffs, New Jersey: Prentice-Hall Inc., 1962), p. v.

back to the middle ages, the most significant contributions are those associated with contemporary institutionalists. By far the most significant and useful theoretical scheme for describing the way in which administrators should act in establishing and maintaining an internal wage structure is that advanced by J. T. Dunlop² and E. R. Livernash.³ Their highly descriptive model attempts to explain the process that should be followed in determining the internal structure in light of the external structure.

The major shortcoming of the model is the breadth of its scope and the number of variables existing in each concept. Because of the number of variables and number of relationships, it is difficult to view the model as one neat package. For the practitioner, the model, in its present state, is of little value. The authors have not attempted to set out a methodology for implementation of this model by the practitioner. Neither have others addressed this task. And those practitioners who feel they are employing the model should be held suspect until it can be shown that their method is indeed employing the concepts outlined in the model.

² John T. Dunlop, "The Task of Contemporary Wage Theory", J. T. Dunlop (Ed.), The Theory of Wage Determination, (London: MacMillan and Company Ltd., 1957), pp. 3-27.

³ E. Robert Livernash, "The Internal Wage Structure", New Concepts in Wage Determination, Ed. George W. Taylor and Frank C. Pierson, (New York: McGraw-Hill Book Company Inc., 1957), pp. 140-172.

However, before dashing off to develop a method that incorporates the concepts in the model, it may be wise to examine and evaluate the existing basic methods⁴ of internal wage determination in order to determine whether or not a method for implementing the theoretical scheme advanced already exists. If a method does not exist, then the researcher will attempt to develop one.

This paper is primarily concerned with the determination of an internal wage structure. It is concerned with developing a method, or indicating an existing one, that can be used by wage administrators to arrive at an equitable system. To my knowledge, no attempt has been made to analyze the Dunlop-Livernash model and to compare it with existing methods of internal wage structure determination. From this analysis and comparison, the researcher will be able to do one of two things: (a) recommend an existing method, or (b) develop a method that will allow the Dunlop-Livernash approach to be employed.

Specifically, the purposes of this paper are (1) to examine and analyze the Dunlop-Livernash model as a method of determining an equitable internal wage structure, (2) to examine the basic methods of internal wage structure determination to see if they presently employ the Dunlop-Livernash approach, and (3) if no existing practices do so,

⁴ By basic methods is meant the four methods of job evaluation, namely the Ranking, Classification, Factor comparison and Point methods.

to develop a method that employs the Dunlop-Livernash model and can be adapted by practitioners of internal wage determination.

CHAPTER II

WAGE STRUCTURE THEORY

1. Introduction

The problem of the distribution of the national dividend, from its inception, has been considered the principal problem of political economy. In particular, economists were interested in the share of labor and its determining factors, "the wealth of nations" depending for the largest part from what was the source of income of the great mass of the population.¹

Because of the direct relationship between the share of labor and the general level of wages, economists have turned their attention particularly towards the wage-level question. However there exist a multitude of levels for different jobs and occupations. This factor makes it impossible to posit a theory on the general level of wages without employing a high degree of abstraction, a state which does not readily please the practical business mind. In order to reduce the level of abstraction, economists have begun to study the factors which determine the wages paid for different categories of labor. This endeavor at increased reality in the field of wages has been joined by students

¹ J. L. Meij, Internal Wage Structure (Amsterdam: North-Holland Publishing Company, 1963), p. ix.

of the social sciences, mathematics and industrial relations. The consensus among such scholars appears to favor the "intermediate level of analysis (of wages) which classical and neo-classical economists...regarded as the proper province of wage theory."² In other words, the problem of wage structure ought to be considered the point at which the question of wages will be analyzed. By employing the concept of a wage structure, one is able to bring order to the sheer task of describing the maze of wages and wage levels. In this chapter we shall examine the more significant contributions made by past scholars to the problem of wage structure and the explanations offered for existing differences, and changes in, wage rates. In order to do this, it may, in some cases, be necessary to review the general theory of wages offered and its relevance, if any, to wage structure theory. However, before beginning this review, let us examine what is meant by the concept "wage structure" and what a theory of wage structure should attempt to explain.

The concept of wage structure has been defined as "the complex of rates within firms differentiated by occupation and employee and the complex of interfirm rate structures;"³

2 D. J. Robertson, "The Determinants of Wage", Scottish Journal of Political Economy, VII (February 1960), p. 1. The quote represents phrases employed by L.G. Reynolds and C. Taft in their introduction to the book, The Evolution of Wage Structure (New Haven: Yale University Press, 1956) pp. 1-3.

3 J. T. Dunlop, "The Task of Contemporary Wage Theory," in J. T. Dunlop (ed.) The Theory of Wage Determination (London: MacMillan and Company, Ltd., 1957), p. 15.

a compound or pattern of differentials for groups or categories of workers each distinguished or typified by some characteristics which sets them apart"⁴...such differentials resulting from differences in levels of skill, occupations, industries, geographical location, urbanization, socio-economic factors, and union affiliation;⁵ "as a generic concept applied to analyses of the interrelation among different wage rates;"⁶ and as the relationship between wages paid for labor in different industries, companies, geographic regions, occupations and jobs (only some of the principal structure-dimensions)."⁷

As for a theory of wage structure, it should attempt "to explain the existence of, and changes in, a more or less explicit hierarchy of wage rates paid for the supply of labor among various categories of suppliers."⁸ It attempts

⁴ Robertson, op. cit., p. 2.

⁵ L. G. Reynolds and G. H. Taft, The Evolution of Wage Structure (New Haven: Yale University Press, 1956), pp. 1-13; L. R. Salkever, Toward a Wage Structure Theory (New York: Humanities Press, 1964), pp. 1-2.

⁶ M. W. Reder, "Wage Determination in Theory and Practise" in N. W. Chamberlain, F. C. Pierson, and Theresa Wolfson (eds) A Decade of Industrial Relations Research (New York: Harper Brothers Publishers, 1958) p. 64.

⁷ J. L. Meij, op. cit., p. ix

⁸ Salkever, op. cit., p. 1.

to explain relative wages and is distinguished from general wage levels which refer to the analysis in which abstraction is made from differences among wage rates. In reality, however, changes in wage levels and wage differentials are inseparable and, in this sense, a relationship may be presumed to exist between general wage theory and wage structure theory.

For purposes of this paper, wage structure theory may be defined as an attempt to explain the occurrence of differences in wage payments as between workers grouped relative to one or more of such criteria as skill level, occupation, industry, geographical location, urbanization, socio-economic factors, and union affiliation, and/or the change in such relative wages over time.

In advancing a theory to explain wages in general, it is not enough to say that they are determined by the supply of, and demand for labor. Rather we need to know and understand the determinants of labor supply and labor demand.⁹ As noted by Belcher,¹⁰ the task of wage theory is

⁹ For example, when we speak of the total demand for labor, we really mean the general level of business activity or national output. To determine the quantity of labor demanded at the micro level we rely mainly on production theory (demand for products of labor). Similarly we need to know the determinants of labor supply. Wages, for example, help to call for the labor supply and to determine where particular workers will seek work.

¹⁰ D. W. Belcher, Wage and Salary Administration (Englewood Cliffs, New Jersey: Prentice-Hall Inc., 1962), p. 29.

to specify the factors that determine compensation, the manner in which they do so, and the relative and absolute importance of each. The same sort of logic applied to developing a theory of wages can be applied to a theory of wage structure. In order to do justice to the understanding of relative wages, wage structure theory must address itself to the determinants of differences in the supply of, and demand for, particular laborers.¹¹

Students of wage determination prior to and since the time of Adam Smith have directed more or less attention to wage structure but rarely to the degrees they have concerned themselves with the general wage level. It was only in the past few years that the need for wage structure theory has been accorded an importance equal to that of wage theory.¹² However, in order to understand fully the scope and meaning of wage structure theory, it is necessary to examine and to assess the significant contributions presented by past and

¹¹ This idea is well formulated by L. R. Salkever, Wage Structure Theory, pp. 2-3.

¹² For example, J. T. Dunlop, "The Task of Contemporary Wage Theory," in J. T. Dunlop (ed.), The Theory of Wage Determination (London: MacMillan and Company Ltd., 1957), p. 27. ..he states that a single rate or average concept is inadequate. The structure of wages, the whole complex of differentials, need to be explained.
F. C. Pierson, "An Evaluation of Wage Theory," in G. W. Taylor and F. C. Pierson (ed.), New Concepts in Wage Determination (New York: McGraw-Hill Book Co., Inc., 1957), p. 17...he suggests that contemporary wage theory is concerned with...how choices among alternative wage policies are made, what determinants shape wage relationships, and what effects follow from wage changes.

present scholars of the wage problem. The remainder of this chapter will be devoted to such an examination.

The chapter will be divided into five sections termed the classical period, marginal productivity and wage structure, bargaining theory and wage structure, the behavioral sciences and wage structure, and the institutionalists. These categories represent, to a greater or lesser degree, the development stages through which wage structure theory has passed. Let us then begin with the classical period and its chief proponent, Adam Smith.

II. The Classical Period

Although some authors include a discussion of wage theories developed prior to the beginning of the Industrial Revolution,¹³ most agree that a worthwhile examination of the literature on the subject of wages should begin with the

¹³ Some authors begin their accounts with the Physiocratic School (1768-1781), a group of French political economists led by Francois Quesnay. They are credited with coining the term "distribution" which has been used ever since to denote that part of economic theory which deals with wages, interest, rent, and profits. Others include a discussion of the just-price theory adopted in the middle ages and the thoughts and contributions of the mercantilists. Because of their insignificant contribution in terms of wage structure per se, they have been omitted. For accounts of these schools of thought see: L. R. Salkever, op. cit., pp. 4-16.
 Michael T. Wermel, The Evolution of the Classical Wage Theory (New York: Columbia University Press, 1939), pp. 1-128.
 Charles W. Brennan, Wage Administration (Illinois: Richard D. Irwin, Inc., 1963), pp. 14-16.

publication of Adam Smith's Wealth of Nations.¹⁴ In particular, it has become customary to commence a discussion of wage structure with the enumeration of the celebrated determinants listed in Smith's work. The explanation of the existence of wage differences offered by Smith appears and reappears, sometimes modified but often identical, not only in work offered as histories of economic thought but in works devoted to analyses of contemporary economic behavior. Let us then examine the contribution made by Adam Smith.

In his Wealth of Nations, Smith stated that wages depended upon the market forces of supply and demand...in the competition of workers for jobs and of employers for labor.¹⁵ In his treatment of wages, Smith linked together a theory of value to the general distribution of income shares, and provided an explanation of individual deviations from the average return in the general share. The interdependence of the Smithian concepts of value, general wages, and wage rates should not be overlooked.¹⁶ His contribution to theory was (1) the demand

¹⁴ Adam Smith, The Wealth of Nations (ed) Edwin Canan (London: Methuen and Company, 1904).

¹⁵ N. Arnold Tolles, Origin of Modern Wage Theories (New Jersey: Prentice-Hall Inc., 1964), p. 10.

¹⁶ L. R. Salkever, op. cit., p. 27.

side of a theory of wage levels, and (2) a theory of wage structure.

Smith believed that wage differences resulted from "impediments to perfect liberty such as employer and employee combination, apprenticeship programs, and a whole host of government interventions."¹⁷ Given free choice, he argued, each worker would select the job offering maximum net advantage from his point of view, not necessarily the highest paying one. The workers choice would be influenced by such factors as the pleasantness or unpleasantness of the work, the time and money required to acquire the skill for the job, the chances of success or failure in the work. regularity and security of employment, the location of employment and the responsibility and status attached to the job.¹⁸

These factors would then govern relative wage rates in a competitive labor market. The result, as seen by Smith, would be system of "equalizing differentials," a wage structure which just equalized the net advantages of different occupations.¹⁹

¹⁷ Ibid., p. 28.

¹⁸ The factors that result in wage differentials, as stated above, are summarized in:
D. W. Belcher, op. cit., p. 31
L. R. Salkever, op. cit., pp. 28-30.

¹⁹ The notion of jobs with long learning times, irregular employment, or unpleasantness receiving higher remuneration is what we call today a supply and demand theory of occupational differences. For a more explicit description see:
L. G. Reynolds, Labor Economics and Labor Relations (4th ED.; New Jersey: Prentice Hall Inc., 1964), pp. 469-471.

Although his analyses of wage differences contains much that is reasonable, it does include some shortcomings. According to one author, Smith apparently thought that the influences making for wage differentiation were changeless even though the average level of wages may change (due to price level changes and changes in the standard of living). Also, his failure to appreciate the extent to which individual differences preclude the realization of a stable set of wage differentials is indeed a serious weakness. Despite these shortcomings, many economists employed the factors he had outlined in explaining relative wages.

Smith's work greatly influenced that of such scholars as Samuel Bailey, Thomas Robert Malthus, David Ricardo, Karl Marx, Nassau Senior, John Stuart Mill and J. E. Cairnes.²⁰ Bailey accepted all of the factors which Smith had singled out as the determinants of wage rates and to these added, in the case of time wage rates, the differences in the rapidity of executing the tasks.²¹ However he did not accept the labor theory of value advanced by Smith, and the notion of a completely rational hierarchy in wage structure based thereon with wage rates everywhere proportional to the disutilities

²⁰ The contributions of these scholars are discussed in the following pages of this thesis.

²¹ L. R. Salkever, op. cit., p. 32.

of employment.²²

Thomas Robert Malthus disassociated labor as a determinant of value from the quantity of the disutility of labor as a determinant of wage rates.²³ To him, wage rates in all employments tended towards the cost of subsistence. The major problem was whether or not the means of subsistence could be increased as fast as the population.²⁴ Any wage differences above subsistence observed at any time were, in his opinion, temporary deviations occasioned by short-run imbalances of the supply of, and demand for particular skills.

The work of David Ricardo²⁵ did little to advance the understanding of occupational wage differences and/or wage structure theory. Ricardo alleged that the relative quantity of labor almost exclusively determines the relative value of commodities. However, he did not erect a wage differential theory in terms of this principle but rather resorted to the

²² Ibid., p. 32. Smith's labor value of theory concluded that the full value of any commodity is the amount of labor it will buy.

²³ Ibid., p. 32

²⁴ N. A. Tolles, op. cit., p. 11.

²⁵ Ricardo is most famous for his development of the "Iron law of wages" which infers that increasing wages only leads to increasing workers beyond the level of subsistence (wages in the long run tend to equal the cost of reproducing labor), thus little can be done to improve the lot of the worker.

the medieval practise of appealing to the authority of custom:²⁶

The estimation in which different qualities of labor are held, comes soon to be adjusted in the market with sufficient precision for all practical purposes and depends much on the comparative skill of the laborer and the intensity of the labor performed. The scale, when once formed, is liable to little variation. If a day's labor of a working jeweller be more valuable than a day's labor for a common laborer, it has long ago been adjusted and placed in its proper position in the scale of value.

Two major differences exist between the analysis offered by Smith and Ricardo. Ricardo appealed to what existed as an explanation of the formation of wage differentials whereas Smith discussed and analyzed the factors which he believed accounted for the differences. Ricardo regarded the sphere of wage differentials as stable; Smith regarded only the equalization of advantage and disadvantage as stable.

The stage was set for Karl Marx to lay bare the economic laws of motion of modern society.²⁷ He was less concerned with the nature and causes of national wealth than Smith and/or the laws which regulated the distribution of that wealth than Ricardo. However, he accepted from them the labor theory of value, which is that the true value of all commodities is

²⁶ L. R. Salkever, op. cit., p. 33. It would have been logical, in view of his value theory, for Ricardo to posit a wage differential theory in terms of different labor costs producing differently-valued grades of labor.

²⁷ This was Marx's ultimate aim. L. R. Salkever, op. cit., p. 34.

their labor cost. He felt that a commodity's value was socially determined thus recognizing, even in the price of labor-time, the influence that contemporary institutions had on their valuation. Thus, in Marxian analysis, a change in social manner (institutions) would alter the inter-relationship of all commodity prices. Hence, consistent with his thinking, the nature of the product market and factor market could be regarded as important influences on wage structure.²⁸

Even though he was not overly concerned with the problem of wage differentials, Marx contributed to their understanding. He recognized the importance of status and training in determining rates. In his rarely read third volume of Capital, he implies the possible existence of an everchanging and multivariate wage structure, a radical departure from the conceptions of the English Classicists.²⁹

Because of rapid growth of the capital plant of Britain during the last half of the nineteenth century, emphasis in the business world shifted to the concept of rational investment for future returns. This resulted in a change in the concept of wage structure for now the capital concept of man dominated the focal point of wage structure theory in place of the

²⁸ Ibid., pp. 35-38.

²⁹ Ibid., p. 38.

equalization of net advantages so dear to Smith. Hence, we can witness a modification of the classical doctrines from Smith to Ricardo. These modifications were developed by Nassau Senior, John Stuart Mill, and J. E. Cairnes and have contributed more to wage structure theory than the works of the preceding half century.³⁰

Nassau Senior rejected the subsistence theory of wages advanced by Malthus and Ricardo, and replaced it with a revised form of wages-fund doctrine.³¹ The size of the fund depended:³²

...on the productiveness of labor in the direct and indirect production of the commodities used by the laborer, and on the number of persons directly and indirectly employed in the production of things for the use of laborers, compared with the whole number of laboring facilities.

Senior conceived of the average wage rate as being determined by a complex of factors including the size of the labor force, the productivity of labor, and the proportion of total output consisting of wage goods. Although he introduces productivity as a factor in determining general wage levels, he says little of differences in productivity when discussing particular wage

³⁰ Ibid., pp. 39-56. Salkever outlines the contributions of each scholar mentioned above in his fourth chapter.

³¹ The wages-fund doctrine was also adopted (partially) by Ricardo and Mill. The theory explains short-run variations in the general wage level in terms of the number of available workers and size of the wages fund. Excellent discussion of this theory can be found in L. R. Salkever, op. cit., p. 52.

³² Ibid., p. 42.

rates. What he does say is that the occupational wage rate must be sufficient to compensate for danger, disagreeableness and degradation of employment, and the degree of strength and skills required by job occupants.³³

Much more was added by Senior to the understanding of wage structure. With regard to interfirm differentials, he felt these resulted from differences in foreign demand, efficiency of capital equipment, inventory levels, and the extent of trade unionism. He appreciated that the product market, technology, and unions contribute to wage differences. To these, he added differences in ethnic origin, mobility, knowledge of other wages, training, and skill required. Of skill, Senior stressed its significance as capital and the associated ability to earn different wages with different skills.

Although he abandoned it later, John Stuart Mill was an advocate of the wages-fund doctrine which placed emphasis on the demand for labor and considered the supply as being fixed.³⁴ In discussing wage structure theory, Mill, like Senior, began by examining the determinants spelled out by Smith. He agreed with Smith stating that skill, like status, was an important differentiating factor. However, he observed that

³³ Ibid., p. 43.

³⁴ N. A. Tolles, op. cit., p. 11.

the more disagreeable positions were often paid less than the more agreeable and less exhausting. Also, he felt Smith's formulation should take account of sex as a factor.

On the subject of external influences, Mill disagreed with the product market influence outlined by Marx and Senior. He believed that the capital expended in setting productive labor to work and not the demand of purchasers for the final product was instrumental in supporting and employing labor.³⁵

But, he recognized the importance of governments and quasi-governments (unions, employer associations) and their effect on the general level of wages and wage structure. However, it appears that he failed to recognize that these institutions more often effect wage structure through modification of the direct determinants of wage differences than as direct determinants themselves.³⁶

In an attempt to explain wage differentials purely on the supply side, Mill, in his sixth edition of Principles of Political Economy, offered the concept of a highly stratified society of classes with little or no movement between those classes, a rudimentary form of the concept of non-competing groups, a notion to which the last champion of the classical age, J. E. Cairnes, made a more significant contribution.

³⁵ L. R. Salkever, op. cit., p. 54.

³⁶ Ibid., p. 53.

Cairnes,³⁷ in his work, pointed to the existence of a temporary discontinuity in the supply of labor. By this he means that at any instant of time competition among laborers is not general in scope but is contained in separated, but interrelated, markets of laborers in comparable circumstances. To these markets, Cairnes assigned the term non-competing groups. Where competition existed, Cairnes believed that wage rates among occupations would be proportional to differential disutility. The imaginary lines between various groups are not impossible to overcome, but are to be regarded as obstacles to expected mobility in response to excessive wage differences.

Cairnes divided the labor class into four categories -- unskilled, artisan, highly skilled and professional -- and found that movement between the groups was slow and that wages were highest in the professional categories. What Cairnes was suggesting was the existence of wage differences in terms of labor immobility and that movement of laborers horizontally (within their categories) was much easier than vertical movement. This notion is still prevalent today.

The outcome of Cairnes' work was the adoption of the existence of the notion of less-competing groups in the labor force or, in contemporary terminology, a definition of labor

³⁷ Cairnes' works are summarized in L. R. Salkever, op. cit., pp. 55-69.

markets. For current purposes, a labor market is defined as "area, defined occupationally, industrially, and geographically, within which workers are willing to move and do move comparatively freely from one job to another...movement within the area is fairly easy and customary; and migration into or out of it is less frequent and more difficult."³⁸ Although Cairnes did not say the above in so many words, the implication is certainly present in his work.

Although most works in the classical period were concerned primarily with the general level of wages, some did shed much light on the subject of wage differences. Unlike the theories advanced to explain the general level of wages, the factors considered as determinants of relative wage rates are, in many cases, applicable in today's setting. For this reason, the review of classical theories, and the singling out of various determinants, has been most worthwhile to an understanding of the present day situation.

III Marginal Productivity and Wage Structure

The acceleration of the industrial revolution and the expansion of markets, among other things, after the middle of the nineteenth century, shifted the attention of a considerable number of wage theorists to physical productivity and product

³⁸ Clark Kerr, "Labor Markets: Their Character and Consequences", in Proceedings of the Industrial Relations Research Association, December 1949, p. 69.

market influences upon wage rates. What evolved from this shift has come to be known as the marginal productivity theory. Even today this theory appears to claim the majority of adherents among the wage theorists of the western world despite its many noted shortcomings. Because of its prominence it would be wise to examine the nature of the analysis and the attacks upon it, and thereby the relevance of this general theory, if any, to wage structure theory.

Although shades of a marginal productivity theory are widest in Ricardian theory of rent, its earliest formulation is attributed to Johann Heinrich von Thunen.³⁹ The work begun by von Thunen was built upon by Gossen and Menger, both Austrians.⁴⁰ Their work had no impact on the development of wage structure theory. Simultaneous to Menger's efforts to explain the distribution of wealth to factors in addition to labor, Stanley Jevons, an Englishman, and Leon Walras, a Swiss, were both trying solve the common problem unknown to each other. And toward the close of the nineteenth century the marginal productivity principle, a neglected principle for almost two decades, was restated by John Bates

39 von Thunen's contribution has been summarized by Bernard W. Dempsey, "The Wage Frontier," Review of Social Economy, XVIII, No. 2., September 1960, pp. 97-109.

40 A. N. Tolles, op. cit., p. 19; J. T. Dunlop "The Task of Contemporary Wage Theory," p. 6-7; Gossen wrote around the period 1854; Menger in 1871. At the same time, the idea of marginal productivity sprang up in England, Italy, Switzerland, Sweden and the United States.

Clark, an American. In brief, Clark's formulation held that the return to each factor was determined at the social margin by the value of the last unit of that factor employed throughout the economy.⁴¹

More explicitly, Clark, in his formulations, employed the device of a static state and assumed a world of perfect markets, perfect information, perfect mobility, constant population, a constant amount of available capital, an unchanging productive technology, labor reduced to labor units of unskilled labor, and diminishing returns (the addition of labor units to a fixed quantity of capital results in a decline in the marginal product of labor as the number of labor units applied is increased).⁴²

On the micro-level, Clark's marginal productivity theory is an employment theory; on the macro-level it is a wage theory. In his presentation, the marginal product of a given quantity of available labor determines its wage level when we consider the market as a whole; in the disaggregated pictures, however, where a single employer finds the wage level determined by forces beyond his control, the marginal product of labor determines the level of employment.⁴³ In

⁴¹ L. R. Salkever, op. cit., p. 75.

⁴² These assumptions are outlined in A. M. Cartter, Theory of Wages and Employment (Illinois: Richard D. Irwin, Inc., 1959), pp. 14-16; L. R. Salkever, op. cit., p. 75. D. W. Belcher, op. cit., p. 35.

⁴³ A. M. Cartter, op. cit., p. 18

this way, the marginal product schedule defines a particular wage-employment relationship. However, nothing meaningful can be said about the particular wage level which will exist in a specific case unless we have knowledge of both demand and supply conditions. In Clark's presentation, the supply of labor is assumed to be perfectly inelastic.⁴⁴

It is useful in analyzing Clark's theory to note that it may be reduced to three premises: the marginal productivity principle (the premise that the rational employer, in an attempt to maximize profits, will be guided by the marginal productivity of a factor in determining the relationship between the factor's return and its employment); the premise of perfect competition (market forces tend to equalize rates of return for all factors over time); and the premise of long-run and general equilibrium in all markets (sufficient time to change the form of capital and move it to its most productive uses).⁴⁵ Given these premises, we can then state that if there is a fixed (inelastic) supply of labor in the market, the level of wages will be determined by the marginal product of labor.

The importance of the above premises cannot be over emphasized. The marginal productivity premise may be perfectly valid in a world in which the other two premises are not

⁴⁴ Ibid., p. 18.

⁴⁵ D. W. Belcher, op. cit., p. 36.

descriptively accurate. Put more clearly, the principle states that "there is a direct functional relationship between the level of wages and the level of employment, and that a rational employer will attempt to adjust one or both of these variables so that the marginal product of wages is equal to the wages of labor." However, to be fully descriptive of the wage determinants, Clark's theory requires the existence of the other two premises.⁴⁶

The marginal productivity was accepted by Marshall and was considered useful for analysis of short-run situations and in situations in which competition was less than perfect. He insisted that it explained only the demand side and that assumptions concerning the supply side were also essential in determining the wage rates. He, like Hicks,⁴⁷ did not consider the analyses as a theory of wages. Hicks referred to the principle as the Law of Marginal Productivity and stated that it will always be in effect, although the conclusion that wages must be identical in all the uses of labor and everywhere equal to labor's marginal product would only follow where there existed the conditions of full competitive equilibrium in the labor market.

⁴⁶ A. M. Cartter, op. cit., p. 19.

⁴⁷ J. R. Hicks, The Theory of Wages (New York: St. Martin's Press, 2nd. ed., 1966), pp. 16-18.

Despite its longevity, the marginal productivity theory has been subjected to many severe criticisms. The attacks have been directed mainly at the implicit assumptions⁴⁸ underlying the theory. The favorite assumption for attack by the anti-marginalist is that of profit maximization.⁴⁹ Its shortcomings under monopoly or oligopoly have been well documented.⁵⁰

The marginal productivity theory has contributed little to a further understanding of wage differentials. As Salkever has stated, wage structure theory:

is not unrelated to the general theory of income distribution but it has a particular interest in the emergence of wage differences and in the change in the size of such differentials over a time period usually shorter than the "long-run" equilibrium, with which most distribution theories are concerned.⁵¹

Marginal analysis appears inadequate for wage structure theory because:

48 Ten implicit assumptions are listed and assessed by Paul H. Douglas, The Theory of Wages (New York: Kelley and Millman Inc., 1957), pp. 68-97.

49 This assumption has been attacked by: Richard A. Lester "Shortcomings of Marginal Analysts for Wage - Employment Problems," American Economic Review, XXXVI (March 1946), pp. 63-82; Herbert Simon, "A behavioral Model of Rational Choice," Quarterly Journal of Economics, LXIX (Feb., 1955), pp. 98-118. (Simon suggests the satisfying principle operates in place of profit maximization.)

50 Documentation found in articles written by Fritz Machlup.

51 L. R. Salkever, op. cit., p. 77. Clark estimated that in the absence of frictions the identity of factor contribution and factor return would take fifty years.

- (1) it is operative in a time period in which the influence of some wage differentiating factors within segments of the time period are antithetical.
- (2) ...applies to economy as a whole...(some) wage differences with which wage structure theory must deal are characteristics of industries and firms.
- (3) ...is a theory of general share (factor) distribution, and hence ignores occupational income distribution as other than a replica process.⁵²

Like the time factor, the frictions assumed out of marginal analysis are of interest to wage structure theory namely because they may contribute to the formation of, or changes in, occupational wage rates. These frictions -- government, union-management relative power -- and the degree of their absence or presence among occupational groups, firms, or industries, may account for some inter-occupational differences. The presence or absence of union or governmental influence in varying degrees in the economy needs no empirical demonstration here.

The limited applicability of the analysis to the problem of the formation or change in occupational wage differentials has been well documented.⁵³ As examples, changes in occupational wage rates is a short-run phenomena while marginal productivity is a static, long-run analysis; changes occur short of full employment (marginalism assumes full employment); and there are changes because of frictions previously discussed.

⁵² Ibid., p. 77.

⁵³ Ibid., p. 86.

However, it would be incorrect to assume that the tendency explained in marginal analyses, which is in operation in the total economy, would have no effect on the segments of that economy. The point is that this influence is less than that of more immediate factors.

To conclude, it appears that, if marginalism is to apply, differential wage movements among industries must reflect differential productivity changes. This concept was studied,⁵⁴ and fortunately for the harried marginalists, it uncovered just such corresponding movements. However, other factors certainly have a strong influence on wages.

IV. Bargaining Theory and Wage Structure

By introducing the union and the process of collective bargaining to the marginal productivity theory, one gets a bargaining theory of wages, that is, a theory in which wage levels are determined by the process of collective bargaining. The theory is based upon the premise that there is no one single wage rate for a particular type of work but rather there exists a range of wage rates encompassed within the parimeters of marginal theory. The range is affected by economic factors and non-economic factors such as union power, management power,

⁵⁴ John T. Dunlop, "Productivity and the Wage Structure" in Richard Perlman (ed.) Wage Determination: Market or Power Forces (Boston: D. C. Heath & Co., 1965), pp. 55-76.

custom, and other behavioral considerations.⁵⁵

One of the earliest attempts to postulate a bargaining theory of wages was carried out by John Davidson in 1898. Davidson claimed that, in the range between the subsistence level, which can be obtained only under primitive capitalist circumstances, and the limit imposed by the product market place, the money wage rate is chiefly affected by institutions - unions, governments and custom.⁵⁶

Since Davidson's formulation, a number of treatises have been advanced in which the 'power struggle' has emerged as the principle mechanism through which wage rates are established.⁵⁷ According to Richard Lester, market rates are really whatever the companies desire them to be or whatever the unions, by means at their disposal can establish as going rates in the

⁵⁵ A list of economic and non-economic influences was developed by James E. Dixon in his thesis on Wage Determination and Collective Bargaining, unpublished Master's thesis, University of Alberta, 1969. The behavioral assumptions are covered in the upcoming section.

⁵⁵ L. R. Salkever, op. cit., p. 110. An increase in worker productivity, he argued, can increase "real wages" but not money wages, since the increased output would decrease prices.

⁵⁷ As examples see: John R. Commons, Trade Unionism and Labor Problems (New York: A. M. Kelley, 1967); Sydney & Beatrice Webb, Industrial Democracy (New York: Longmans, Green, 1920), pp. 654-671; Charles E. Lindblom, "Bargaining Power in Price and Wage Determination," Quarterly Journal of Economics, LXII, (May 1948), pp. 396-417.

locality.⁵⁸ The Webbs considered bargaining power as the means for transferring the unilateral imposition of wage rates from the employer to the union. Of bargaining power, Slichter⁵⁹ has written that it may be defined as the cost of A of imposing a loss upon B. Shister⁶⁰ contends that bargaining power is an important factor in accounting for union wage patterns. And Dunlop relates bargaining power to interferences with the operation of free and perfect markets.⁶¹

In order to better evaluate the usefulness of the modern bargaining concept in explaining occupational wage rate differentials, let us first obtain a description of its elements. A model of an abstract of the concept would include the following postulates: (i) the factor and product markets are imperfect, (ii) the individual employee lacks bargaining power, (iii) the collective bargaining power of the employees (organized) contests the employer's monopsonistic power, (iv) the influence of wage bargains extends beyond the particular firm, (v) and the area of interdeterminacy is extremely wide,

⁵⁸ R. Lester, "Results and Implications of some recent Wage Studies," in R. Lester and J. Shister (eds.) Insights into Labor Issues (New York: Macmillan, 1948), p. 201.

⁵⁹ Summer H. Slichter, "The Impact of Social Security Legislation upon Mobility and Enterprise," American Economic Review, XXX, (March 1940), p. 57.

⁶⁰ Summarized in C. E. Lindblom, "Bargaining Power in Price and Wage Determination," op. cit., p. 397

⁶¹ John T. Dunlop, Wage Determination Under Trade Unions (Oxford: Basil Blackwell, 1950), p. 74.

(vi) and in an imperfect market, the economic power of persons can affect the price.⁶²

The above aids in pointing out the existence of both market and human (power) forces in the determining of wage rates.

Up to the recent past, the contributions of bargaining power theorists to an understanding of wage structure have, for the most part, been of an indirect nature. This is not surprising in view of the fact that many of the theorists were most concerned with general level of wages. However, some scholars have, in discussing bargaining, introduced the notion of an occupational group as one of the bargaining parties. The difference in wages among suppliers of labor can then be treated as a consequence of differences in the success of bargaining.

In their efforts to fill in some of the empty boxes of the bargaining power theory, contemporary scholars have added many insights to the process of wage structure formation and change. According to Ross⁶³ an understanding of the political and sociological implications of trade union policy is essential

⁶² These are summarized from L. R. Salkever, op. cit., pp. 115-116.

⁶³ Arthur M. Ross, Trade Union Wage Policy (Los Angeles: University of California Press, 1956).

to an understanding of wage structure. Others⁶⁴ have attempted to build bargaining models by employing a games theory approach. Dunlop⁶⁵ and others have examined the construction of bargaining models. Dunlop feels that a theory of wages under collective bargaining must explain the determinants of the general level of wage rates and the structure of wages. With regard to the latter he states that:

All wage structure -- intra-plant, inter-plant, or inter-industry -- contain a limited number of "key" rates on which wage making forces tend to concentrate. Around any key rate will be others, which are related by technology or work relations, in the case of intra-plant wage relations, or related by product market competition or locality ties in the case of inter-firm wage relations. These clusters of wage rates tend to move together.... The determination of particular wages under collective bargaining can be fruitfully approached, for the limited number of key bargains, in terms of maximizing behavior on the part of unions and companies.

At present, it appears that bargaining theories include such a multiplicity of variables as determinants that knowledge of all is a far off goal. It is only through outlining the area of possible outcomes and reducing the zone of indeterminacy that bargaining theory will throw light upon the evolution and

⁶⁴ As an example: J. Pen, "A General Theory of Bargaining", American Economic Review, XLII, (March, 1952), pp. 24-42.

⁶⁵ J. T. Dunlop, Wage Determination Under Trade Unions, op. cit., pp. V-VI.

change of wage structure.⁶⁶

V. The Behavioral Sciences and Wage Structure Theory

No discussion of wage structure theory would be complete if it did not examine the contribution made to wage determination by the behavioral scientists. Their work can, and does provide great insight into the internal wage structure of the firm.

Several concepts have been developed which aid in understanding the determination of wages. March and Simon employ the inducement-contribution utility balance concept to explain the decision of a person to join and remain with an organization. Institutional forces such as labor markets lead employers to set wages in line with the community or industry in order to recruit and retain employees. And labor unions, according to Ross are political institutions which exert power upon the labor market through their size, money, and influence of their leaders.⁶⁷

Internally, occupational wage differentials are influenced by custom, internal consistency, and status re-

⁶⁶ Clark Kerr, in a preview of the literature on union impact, concludes that the union has had considerable impact on personal and interfirm differentials (reducing or eliminating them) and a lesser impact on inter-area, inter-occupational, and inter-industry differentials. See Clark Kerr, "Wage Relationships - The Comparative Impact of Market and Power Forces" in R. Perlman (ed.) *Wage Determination Market or Power Forces* (Boston: D. C. Heath and Company, 1964), pp. 80-99.

⁶⁷ These are summarized in D. W. Belcher, op. cit., pp. 50-51.

relationships. Other single factors suggested as explanations of occupational wage differentials are (1) the equality of the wage occupation with the social utility of the function performed, (2) the disagreeableness of the job, (3) differences in abilities, (4) the time span of discretion.⁶⁸ Many of these factors, although stressed by the behavioralists, are found in the classical theories examined earlier.

A sociological analysis of types of labor market indicates the variety of social forces impinging on occupational wages and how different forces govern the different markets. Belcher, in his summary of markets, suggests that it is useful to view them in terms of bureaucratic labor markets, craft labor markets, industrial labor markets, professional labor market, and others. As an example, in a bureaucratic labor market labor is needed to fill low level jobs. Wages must follow the rank order of training and experience and wages and status must correlate. In most bureaucracies there exists a pay range for each job, wages for particular occupations should correspond to community rates, and the job classification system is experienced on a pre-existing wage structure. Factors such as political measures, occupational monopolies, and historical precedents cause inequalities for the wage structure⁶⁹

⁶⁸ Ibid., pp. 51-52. The notion of a time span was developed by Elliot Jacques, in Equitable Payment (New York: John Wiley & Son, Inc., 1961). He uses this concept to posit a behavioral science theory of wages.

⁶⁹ The forces acting in the other types of labor markets are covered by Belcher, op. cit., pp. 53-56.

Another very important force operating upon wage differentials is that of group pressures. People, for various reasons, come to belong to certain groups and often think of themselves as belonging to a specific occupational group. A group, for various reasons, may consider itself more important than others and thereby attempt to pressure management or the unions into granting or getting them a higher wage to accompany their perceived status.

In summation, it would appear that a behavioral science theory of internal wage structure would consist of the following elements: (1) the force of social norms and tradition; (2) accommodation of sociologically diverse labor markets; (3) employers as wage setting institutions, and (4) the force of group power. All of these elements have a definite impact on the wage structure of a firm. An the summary of the behavioralists' work sheds light on some of the factors which are not embodied by traditional economic theory.

VI. The Institutionalists

Labor economists, disenchanted by the shortsightedness of traditional economic theory in wage determination, have attempted to build a wage theory that accommodates observed wage determination processes and institu-

tions.⁷⁰ Their attempts to integrate the economic and non-economic wage-influencing factors into a cohesive theory have not been wholly successful mainly because of the wide range of variables involved. Thus, they have produced little that is widely accepted as of predictive value. But, and this is a significant achievement, attention has been directed to the importance of wage structure analysis per se, and not as a corollary of the level of real wages.

The institutionalists employ an empirical approach and dynamic analysis when considering the question of wage determination. In considering wage structure, they focus attention on both differentials and equalities. All types of wage structures are analyzed -- intra- and inter-company wage structure and intra- and inter-industry wage structure variations -- and the relationship between them.⁷¹ Within each type of structure, the range of choice and wage determinants are subjects of study.

⁷⁰ The most successful of these attempts are those made by: L. G. Reynolds and C. H. Taft, The Evolution of Wage Structure (New Haven: Yale University Press, 1956). Richard A. Lester, "A Range Theory of Wage Differentials," Industrial and Labor Relations Review (July, 1952), V, pp. 483-500. G. W. Taylor, "Wage Determination Processes," in F. C. Pierson and G.W. Taylor (eds.) op. cit., pp. 83-113. John T. Dunlop "The Task of Contemporary Wage Theory," in J. T. Dunlop (ed.) op. cit., pp. 14-27.

⁷¹ Numerous descriptive studies of wage structure variations have been conducted. As an example: J. T. Dunlop in "Productivity and the Wage Structure," found in Richard Perlman (ed.), op. cit., pp. 55-76, and A.M. Ross, op. cit., pp. 113-133, focus attention on particular variables as explanations of variations (continued on page)

Although the institutionalists have not been able to present a well accepted theory of wages, they have been able to point out the importance of many variables and the importance of analyzing particular situations. It appears, from reviewing the current works, that the tendency has been toward the construction of models to explain the process of wage determination. A review of the most significant advancements will be reviewed below but not exhaustively. Many of the lesser studies can, for our purposes, be set aside.

Reynolds suggest that our efforts should not be directed towards the development of a wage theory, but rather that one should think in terms of an array of wage theories oriented towards different kinds of question.⁷² In a later publication, Reynolds and Taft state that one should be concerned primarily with relative wages and the forces (market and institutional) which affect the wage structure.⁷³

71 (continued) in the industrial wage structure. Dunlop stresses "productivity" and Ross stresses the influence of unionism. For similar studies, see also J. Garbarino, "A Theory of Inter-Industry Wage Structure Variation", Quarterly Journal of Economics, LXIV (May, 1950), pp. 282-305.

These are but a few empirical studies, usually with an abundance of statistical evidence, that attempt to explain the existence of wage differentials.

72 L. G. Reynolds, "The State of Wage Theory", Industrial Relations Research Association, Proceedings of the Sixth Annual Meeting, (Washington, D.C., December 28-30, 1953), p. 235.

73 L. G. Reynolds and C. H. Taylor, op. cit., pp. 1-13.

Lester⁷⁴ offers a wage theory to explain wage differentials. His formulation is based on several studies of labor market behavior and employs what he calls anticompetitive, and competitive factors. These factors operate in the labor market to restrict or prevent competition for jobs, to prevent market adjustments, and to influence the function of hiring and pay.

Taylor⁷⁵ appears to offer a model of collective bargaining as a basis for wage determination. The major factor in the model is the consequences of non-agreement. Union-management relationship plays an important role in his formulation. Reder⁷⁶ posits the existence of a hiring preference function for each employer which relates the number of man hours of labor employed to hourly wage rates. His formulation includes both market and institutional forces.

The most elaborate model is offered by Dunlop.⁷⁷ The structure of wage rates with a company, industry, or industries is conceived of as a balanced system. The system

⁷⁴ R. A. Lester, op. cit., pp. 383-500; summary found in D. W. Belcher, op. cit., p. 72.

⁷⁵ G. W. Taylor, op. cit., pp. 83-113.

⁷⁶ M. W. Reder, op. cit., pp. 69-70.

⁷⁷ J. T. Dunlop, "The Task of Contemporary Wage Theory", J. T. Dunlop (Ed.), op. cit., pp. 16-20. This model is explained in detail in the third chapter of this thesis along with the modifications and additions suggested by Ross and Livernash in New Concepts of Wage Determination.

has the following elements: job clusters, wage contours, and key rates.

A struggle for liberation from the restrictiveness of overgeneralized principles and laws (in explaining wage differentials) is reflected in contemporary wage structure analysis. An attempt to reconstruct a generalized statement which bears some resemblance to reality of how money wage rates are determined and how changes in these rates are affected has resulted in a plethora of special case studies which are of little theoretical value. The most promising model produced to date is that presented by Dunlop and analyzed in detail in the following chapter.

VII. Concluding Remarks

This chapter has attempted to outline the explanations given for the existence of wage differences. It appears that theorists have relied on one or more of the following lines of explanation. (A) Non-pecuniary differences in the attractiveness of various employments; (B) differences in net marginal value product of laborers and/or groups of laborers; (C) differences in the ability to wield power against, or coerce, adversaries in the wage determination process; (D) variations resulting from extramarket forces, governments, unions or social custom; (E) and a complete lack of relationship between wage rates and the allocation

of specialized types of labor.⁷⁸ That is, reliance has been placed on the market and/or institutional forces to explain wage differences. These are undoubtedly the two general approaches to the theory of wage structure. Each has its place and under pressure, most students of labor markets will concede this.

⁷⁸ L. R. Salkever, op. cit., p. 134; L.R. Salkever, "Toward a Theory of Wage Structure", Industrial and Labor Relations Review, Vol. VI (April, 1953), p. 302.

CHAPTER III

INTERNAL WAGE DETERMINATION - A THEORETICAL VIEW

1. The Internal Wage System

As mentioned earlier, it is the task of wage structure theory to explain the existence of, and change in, a more or less explicit hierarchy of wage rates paid for the supply of labor power among various categories of suppliers.¹ Within this criteria, it appears that Dunlop² and Livernash,³ with their concepts of job cluster and wage contour, offer the best available theoretical scheme for describing the way in which administrators act in establishing and changing an internal wage structure. In order to evaluate the usefulness of the theoretical scheme, it is necessary to both describe and analyze it in detail. It is to this end that the remainder of this chapter is devoted.

Specifically, the chapter will be divided into two main sections. The first section will outline what is meant by the term internal wage structure and then examine the concepts of job cluster and wage contour. These concepts

¹ L.R. Saikever, op. cit., p. 1.

² J.T. Dunlop, "The Task of Contemporary Wage Theory", op. cit., pp. 3-27.

³ E.R. Livernash, "The Internal Wage Structure", New Concepts in Wage Determination, op. cit., pp. 140-173.

will be defined separately and then placed in their proper perspective in terms of the total system. Whenever possible, diagrams and examples will be used to facilitate understanding.

Because the internal wage structure is not determined in a vacuum but rather in a total environment, the influences of this environment must be examined. Thus, in section two the external forces - the labor market, the product market, and institutional influences - and their impact on the determination of the internal system are discussed.

A. The Internal Wage Structure as a Conceptual Construct

Despite the popularity of the term "wage structure" in the language of both industrial relations and economic theory, relatively little effort has been devoted to putting forth a generally accepted definition of the concept. To some authors,⁴ wage structure is a convenient phrase employed to convey little more than what was referred to, in earlier terminology, as relative wage relationships -- an observed array of relative wage rates. To others, the major assumption underlying the concept, either explicitly or implicitly, is that while all wages are related..., some are more related

⁴ L.G. Reynolds and C.H. Taft, op. cit., pp. 1-13.

than others.⁵ And in this degree of relatedness, reference is not just to an array of comparisons but also to structural relations presumed to determine the relative position of wage rates. Thus, the search for the determinants of wage structure is, in more formal language, the isolation of wage relationships with a relatively high degree of autonomy of invariance with respect to changes in other economic relationships.

The notion of a structure suggests a purposive design achieved by consistent and precise application of a rational scheme of principles. However, in the real world consistency and precision are never realized, ultimately because interests clash over notions of equity, efficiency, and justice.

On a macro level, the internal wage structure may be viewed as a system of wages lying under the control of a common administrative authority. Its total scope ranges from wage rates on jobs, earnings from jobs, to a variety of wage supplements. On a micro level, it refers to a system of wage equalities and differentials, typically relative jobs rates and occasionally personal rates, under a common unit of administrative control. Clearly, too, one cannot ignore the important role played by the job structure in the

⁵ Arthur M. Ross, "The External Wage Structure", New Concepts in Wage Determination, ed. George W. Taylor and Frank C. Pierson (New York: McGraw-Hill Book Company, Inc., 1954), p. 173.

structuring of the internal wage system. The job hierarchy, an administrative device for crystallizing functions as specific tasks that in turn dictate specialized labor requirements, supplies the inner logic for the ordering of job rates.

The internal wage system derives unity and coherence from the decision making authority to which it owes its existence and by which its outer limits are determined. This authority is influenced by environmental forces such as the labor and product markets, institutional organizations such as unions, government, and employer associations, and technological discoveries and improvements. Thus in its design and modification, the internal wage structure reflects the effects of external pressures and internal discretion.

The evolution of the internal wage structure depends upon the combined effect of three elements: the impact of the environmental forces just mentioned, the range of administrative discretion afforded in each case, and the strategies and lines of action by which discretion is exercised.⁶ Thus the administrator or decision-maker must concern himself with both the internal and external wage structure. Furthermore, he must concern himself with the inter-relatedness of the two. In order to accomplish this, Dunlop

⁶ George H. Hildebrand, "External Influences and the Determination of the Internal Wage Structure", Internal Wage Structure, ed. J.L. Meij (Amsterdam: North-Holland Publishing Co., 1963), p. 265.

suggests that he should employ the concepts of a job cluster and a wage contour. These concepts are discussed in the following sections.

B. The Concept of Job Cluster

To fully understand this concept, an appreciation of the importance of the job structure or hierarchy within an organization is required. Typically, job structures acquire their main characteristics from the nature of the production process. What occurs is a breakdown of functions (activities) into departments and from these to job families or clusters. This breakdown of functions is influenced by technology, managerial discretion, unionism, and competitive economics.⁷ Job hierarchy is merely a method of grading labor, a necessary precedent to its pricing.

Dunlop has defined a job cluster⁸ as a stable group of job classifications or work assignments within a firm (wage determining unit) which are so linked together by technology, the administrative organization of the production process, or social custom that they have common wage-making characteristics. More specifically, a job cluster

⁷ These are described by Hildebrand as being some of the determinants of job structure.

⁸ This concept is discussed in great detail in J.T. Dunlop, "The Task of Contemporary Wage Theory", op. cit., pp. 16-17 and E.R. Livernash, "The Internal Wage Structure", op. cit., pp. 140-172.

will contain a key rate⁹ or, in some cases, several. A key rate job may simply be a "good" cross comparison job because of similarity of job content, but usually it has significance because of its importance as to number of employees or key skills. According to Dunlop, a key rate may be the highest paid, or the rate paid at the top step of a promotion ladder, or the rate paid for a job at which a large number of workers work.

The key rates in the job clusters are the focal point or point of concentration of wage-making forces. These rates spread internally through the relation of key job rates to each other and associated rates and externally through the operation of wage contours. These relationships will be more easily identified after an examination of the cluster and contour concepts is completed.

The cluster contains, along with a key rate(s) a group of associated rates. Typically, the key-rate jobs are the more important jobs or the dominant jobs within a group. Non-key rate relationships are built around the key rate(s). The job-content comparison of the non-key job with the key job is the primary determinant of the non-key rate. The key rate jobs show relatively less change in job content and are often relatively more standardized among firms. Adjustments to the key rate is likely to have repercussion both within and outside of the particular cluster. However,

⁹ The term key rate and key job are used interchangeably.

adjustments to non-key rates will have repercussions only within the cluster concerned.

Internal comparison between key jobs in different clusters tends to be less precise and of a somewhat different character than comparisons within a cluster. As comparison is made among jobs that are very different in type and kind of job content, the area of judgment as to the correct relationship widens.

Livernash¹⁰ advances the proposition that in internal wage-rate comparisons of job content and job relationships, any given job is not related to all other jobs in an equally significant manner. Some jobs are closely related as to wage significance, others more remotely related. While such job relationships have no simple, single basis, the larger relationships develop around key jobs.

The internal wage structure, then, is to be envisaged as several groups of jobs or job clusters. The assumption underlying this classification is that internal job-content comparison as a basis for wage rate determination is stronger, and of somewhat different character, within certain groups of jobs than between them.¹¹

¹⁰ Livernash, op. cit., p. 147. (This is the same point that Ross (see page 2) was making).

¹¹ Livernash, op. cit., p. 148.

Job clusters can be considered as being broad or narrow.¹² The broad group may be illustrated by examining the make-up of a manufacturing firm. For purposes of more efficient and effective administration, the executor of wage policy will, in all likelihood, divide the company's employees into three major groups: managerial (executive, administrative, professional, and supervisory); clerical (clerks, typists, stenographers); and factory (machinists, laborers). These three categories occur in most organizations and are, for wage administration purposes, broken down into narrower clusters. In the factory, for example, one would find separate groups (clusters) for maintenance, production, transportation, and others. Similarly maintenance might be broken down into electrical, plumbing, and janitorial. Thus, for purposes of wage determination, one must determine the make-up of the various clusters and the key-rate jobs within the clusters. Thus the administrator must understand the factors that influence the formation of narrow clusters.

The basis of classification for narrow clusters, unlike the broader clusters, is varied. Jobs are tied together and thus form clusters by virtue of geographical location in the plant (spatial factor), organizational pattern and common supervision (hierarchy factor), related and

¹² Livernash, introduces the notion of broad and narrow clusters, op. cit., pp. 148-152.

common jobs skills (task factor), common hiring jobs and transfer and promotion sequences, as well as a common production function (departmentalization factor).¹³ It is these factors which influence the formation of job clusters.

Within the broad managerial, clerical, and production groupings one can identify a few meaningful special types of job clusters. The types are the departmental functional group, the skill family, related types of work, and the work crew or closely knit work group.¹⁴ The departmental functional group is found in all manufacturing firms. What occurs is that the production process is broken down into divisions or departments. These departments form typically as a result of different production functions. The transfer of personnel from one department to another is infrequent. Each department will have its own hiring-jobs and promotion sequences. Wage comparisons across departments, although existent, is much weaker than comparisons within the departments and of a more general character.

Endless examples of the departmental functional group could be cited. For example, a shoe factory is divided into departments of cutting, stitching, lasting, making, and packing. Most of the jobs in the stitching department, but by no means all, are stitching jobs and involve the use of

¹³ Livernash, op. cit., p. 149.

¹⁴ Ibid., pp. 150-152.

various types of sewing machines. But the jobs in the packing department do not include the skill requirement common to those in the stitching. Rather, the person fulfilling the requirements of the job needs no specific skill at all. Thus, transfer from one department to the other is virtually unknown.

The skill family refers to grouping positions in terms of occupation or craft. The stitching jobs in the above example is representative of a skilled craft group. The apprentice to journeyman route found in most trades such as plumbing, electrical, and carpentry represents a skill family. Examples of occupationally based jobs could include in a group clerical personnel, locomotive engineers, and so on. These groups, like those grouped on a craft basis, all have a common skill present. All clerical personnel have to have a minimum requirement of knowledge in office procedures and typing. All electricians must have completed a given number of apprenticing years and hold journeyman papers. More examples could be cited. But the point is that grouping jobs in terms of common skill is reasonable and most practical.

The related types of work class can be illustrated by the variety of inspectors in a provincial government. All the inspectors jobs relate to one task; law enforcement. Even though these people perform a variety of duties, their main task is one and the same for all. The game warden or conservation officer carry out duties that are very dissimilar

to those of the motor vehicle inspector or liquor inspector. Typically, they fall within many departments. However, despite all of the dissimilarities, they are related as a wage group, though the relationships are not equally strong among all jobs.

The fourth type, the work crew or closely knit group, can be exemplified by the printing or steel process. In the former, one finds the printing press crew, in the latter, the open hearth crew. The formation of each crew is primarily a result of them performing the same task in the same geographical location. The importance of this category in terms of wage determination is that wages can be influenced either within the group or among groups.

The above types should not be considered as rigid classification of narrow job clusters. A department may, because of its size, constitute a meaningless wage group. Similar cases can be presented for the other types. Nevertheless, it is useful to think in terms of groups of jobs when determining wages.

The determination of wage relationships with a narrow job cluster is predominately based upon a technical, though not necessarily formal, job content comparison. The skill required, including job knowledge, is the primary differentiating factor, but there are modifications in job placement relative to responsibility, working conditions, and physical effort. These relationships are influenced somewhat by custom and tradition and are mutually interdependent with pro-

motion and transfer sequences.¹⁵

The job cluster concept is most helpful in describing the determination of the internal wage structure. It explains the breakdown of the organization into several job groupings or job clusters, each of which contains one or a few key jobs (see Figure 1). These key jobs become the focal point of concentration for wage making forces and provide the nucleus around which other non-key job relationships in the firm are built. But the forces which determine the wage rates for the key jobs and the rates for associated jobs in a cluster are not confined within the firm. The environment -- labour and product markets, institutional forces -- plays a very important role. The "environment" cannot operate directly on a thousand slightly differentiated jobs. Rather, the environment is related to the internal structure by the key jobs. Indeed, the key jobs are affected by the environment, and adjustments in their rates are transmitted to other rates within the firm, cluster by cluster. To explain the link between the external and the internal, Dunlop employs the concept of a wage contour. The next section will describe this concept in detail.

C. The Concept of Wage Contour

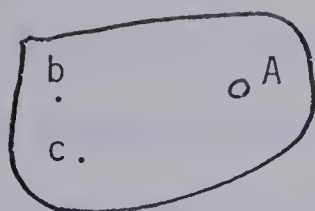
The concept of a wage contour is used by Dunlop to

¹⁵ Ibid., p. 152.

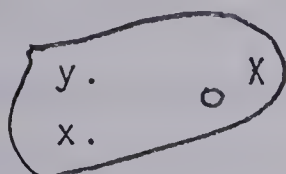
FIGURE I AN EXAMPLE OF A JOB CLUSTER

Legend: ○ = key rate
 . = associated rate

#1



#2



A and X represent key jobs in clusters one and two respectively. Small b and c, and y and z are associated rates in the two clusters.

The basic assumption in this cluster formation is that b and c can compare their jobs and rates with A. Similarly y and z can compare their jobs and rates with X. Hence, it is necessary that the rates paid b and c are fair and equitable in relation to A.

For wage setting purposes, the relationship between A, X, and other key jobs is determined. This is achieved by means of job evaluation. Then the rates for A and X are set by comparing these key jobs to similar jobs in other firms. The stage is now set for the rates of b and c to be set in relation to A's rate. This process is carried out in each narrow cluster.

identify one of the key links between the internal and external wage structures. He defines a wage contour as "a stable group of wage-determining units (bargaining units, plants or firms) which are so linked together by (a) similarity of product markets, (b) resort to similar sources for a labor force, or (c) common labor market organizations (custom) that they have a common wage-making characteristic".¹⁶

¹⁶ J.T. Dunlop, "The Task of Contemporary Wage Theory", op. cit., p. 30.

The wage rates for particular occupations in a particular firm, although not ordinarily independent of all other rates, are more closely related to the wage rates of some firms than to others.¹⁷ A contour for specific occupations is to be defined in terms of both the product market and the labor market. A contour, then, can be expected to have the following dimensions: (1) particular occupations or job clusters, (2) a sector of an industry, and (3) a geographical location. An example would be the bricklayers in the construction industry in Edmonton. The firms comprising a contour constitute a particular product market. Also, they may be located in one labor market or scattered throughout a region or nation. The level of wage rates by occupations or key jobs within the contour need not be equal, but changes in compensation are highly interrelated.¹⁸

Dunlop uses the concept of wage contour in two contexts: the one to designate a common group of wage setting agencies; and the other to refer to particular jobs having common significance to a group of independent wage setters who are linked together by a common labor market, product market, or by both together.

A sharp boundary line or set of outer limits for a

¹⁷ Ibid., p. 131; A.M. Ross, "The External Wage Structure", p. 173; E.R. Livernash, op. cit., p. 147. All of these authors make this point.

¹⁸ J.T. Dunlop, "The Task of Contemporary Wage Theory", op. cit., p. 131.

contour cannot be established. For example, firms with unique product markets may fall among several wage contours. Similarly, some major contours may influence the wage settlements within less significant wage setting groups of firms. Or, a contour may be confined to a locality by its labor market dimension. Over time, a contour, as a result of changes in technology and competitive conditions, which in turn affect the labor and product market, may change.

The firms which comprise a contour constitute a particular product market; they also may be located in one labor market, or scattered throughout a region or a nation. By definition, a contour refers to a particular range of skills, occupations, or job clusters of the firms.¹⁹ Or, put somewhat more meaningfully, job clusters of the firms which are formed as a result of factors such as skill or occupation constitute, for wage determination purposes, a contour. Thus, it can be seen that not all types of labor hired by a firm will have wage rates determined in the same contour. That is, a firm employing a glassblower, a professional chemist, and a janitor may be expected to be part of three quite different contours.

Described in more detail, a wage contour contains one, or in some cases, several key bargains. The contour is comprised of the rates for the key firm(s) and a group of associated rates. The key bargain may be set by the

¹⁹ Ibid., p. 132.

price-leader, the largest firm, or the firm with the strongest leadership in the labor relations area. A contour, then, can be envisaged as a grouping of firms, for a given range of occupations, in which some are very closely related to the leaders, others less directly associated.²⁰ (See Figure 2).

A modification of Dunlop's concept of a wage contour is offered by Ross.²¹ Ross states that intraindustry comparisons is the strongest force in wage determination and that the comparisons should be more carefully defined. This is at odds with Dunlop's firm stipulation that a wage contour is not to be identified with an industry. Also custom is seen by Ross to operate on wage contours by traditional or historical differentials.

A variety of devices have been developed which relate wages determined by the key settlements to those of other firms in the contour. Common expiration dates for wage agreements or sequential anniversary dates or commitment to move with the industry average are some of the methods of relating firms in a contour.²²

²⁰ Ibid., p. 133.

²¹ Ross, "The External Wage Structure", op. cit., p. 197. This argument is based on findings reported by Irving Bernstein in his work on Arbitration in Wages.

²² J.T. Dunlop, "The Task of Contemporary Wage Theory", op. cit., p. 133.

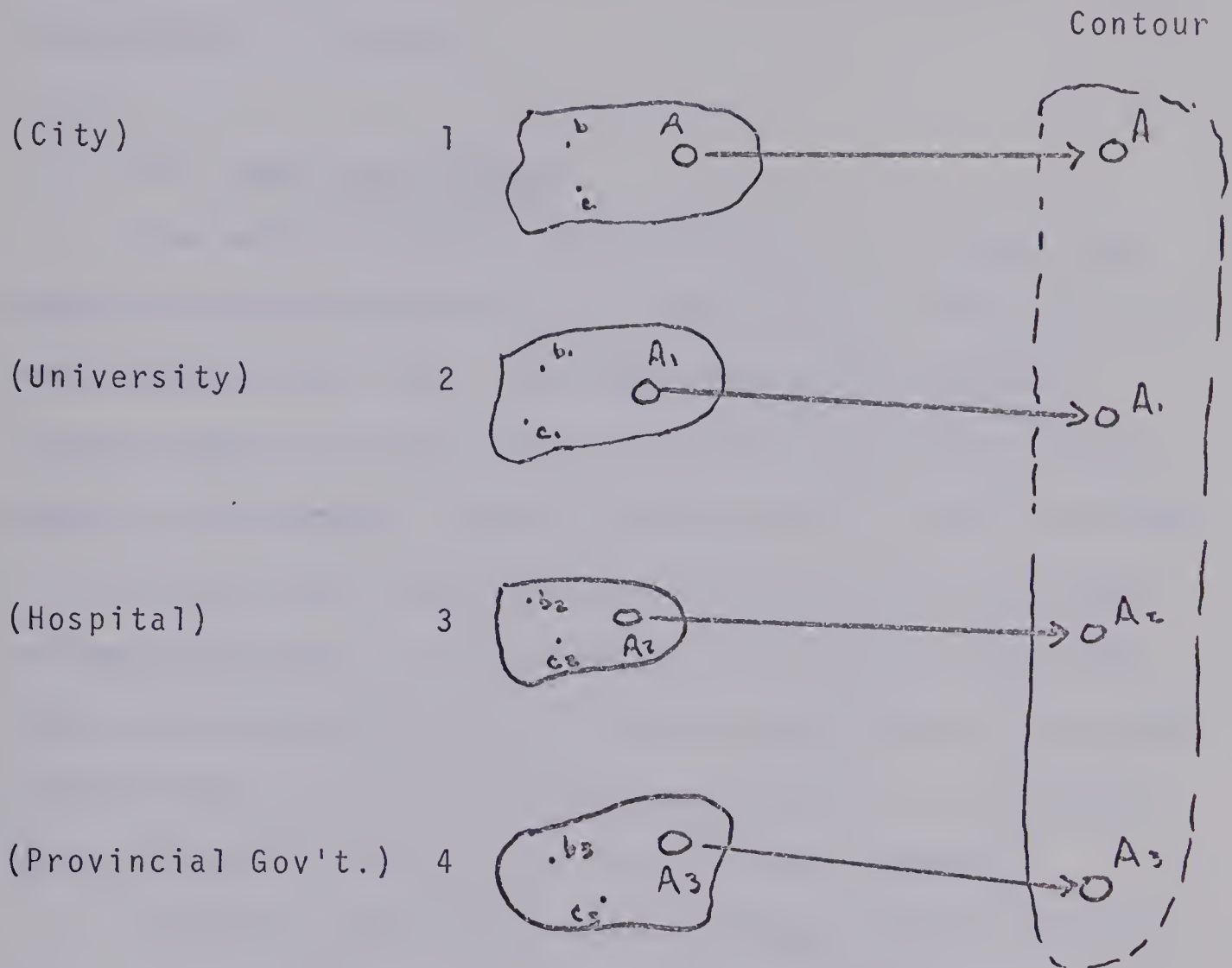
FIGURE II A WAGE CONTOUR EXAMPLE

Occupation: Stationary
Engineer

Legend: ○ = key rate

• = associated rate

Firms:



Note: All firms are in the same product market. All are in service industry. It is suggested that the city, in determining a rate for its stationary engineers, would compare its rates with those paid by the other three firms since the other three firms are in the same product market and labor market. Differences in rates might arise because of union pressure or other institutional forces.

A further dimension is added to the notion of a contour by Hildebrand. He feels that market oriented jobs fall into one type of occupational contour, while union-oriented and cost-oriented jobs have contours of their own. The significance of these will be discussed in the section on external influences.

D. The Total System

The major elements of the system of internal wage structure determination are the job cluster, the wage contour, and the key rate. All wage structures contain a limited number of "key" rates on which wage making forces tend to concentrate. Around any key rate in any firm there will be associated rates which are related by technology and work relations, in the case of intra-plant wage relations, or related by product market competition or locality ties in the case of interfirm wage relations. In theory, these clusters of wage rates tend to move together.

A close examination of the scheme reveals that the concepts of job cluster and wage contour are analagous. In both, a group of rates surround a key rate. The key rates of a cluster for various firms become the key rate and associated rates in the wage contour. These rates (those in the cluster) extend out from the external structure of the firm to the exterior and constitute the focal points for wage setting forces among firms within the contour. The key rates in the job clusters constitute the

channels of impact between the exterior developments in the contour and the interior rate structure of the firms (see Figure 3).

Although the system does include both the internal and the external structures, its greatest strength lies in its concept of job cluster. The concept provides a sound theoretical base upon which to build a practical system of internal wage determination. The wage contour concept is of less value to the wage administrator. But it is most descriptive in terms of relating the internal and external environments.

Before elaborating on the usefulness of the job clusters concept as a theoretical construct, the influence of external forces should first be discussed. Section II contains just such a discussion. An attempt is made to relate the impact of the external environment to the concept of job clusters and therefore to the internal wage structure.

2. The External Influences

Any approach to an understanding of particular systems must distinguish and relate the internal and external forces that go into their shaping.²³ In terms of the external wage system, the relevant forces include the influences

²³ G.H. Hildebrand , op. cit., p. 261.

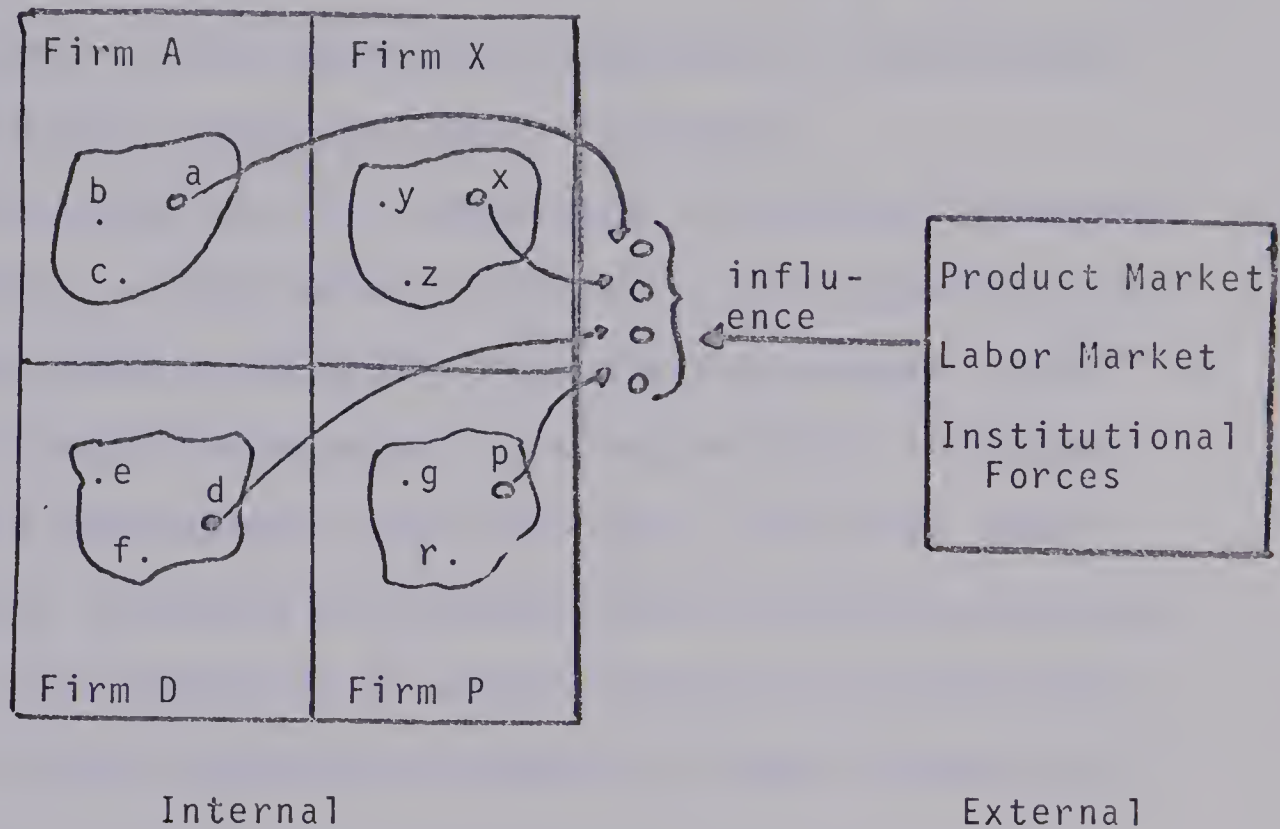
FIGURE III THE TOTAL DUNLOP-LIVERNASH SYSTEM

Occupation: Electrician

Legend: ○ = key rate

Firms A,D,P,X

. = associated rate



The above represents the total system in terms of only one key rate. To depict it properly would require the addition of 15-25 more such diagrams. However, the point to be made is represented above. What is suggested is that four firms in the building construction are determining the rate to be paid an electrician and associated jobs such as 1st, 2nd, and 3rd yr. apprentices. In the example, the journeyman electrician is chosen as the key job. Thus, firm A compares its rate with those paid by firms D, P, and X and based on this arrive at a relative figure. This figure is then subjected to internal discretion and union influence before it is finally resolved. If firm A is the largest firm, or the price leader, the other three firms will pay identical or quite similar rates, again influenced by the external forces.

ected by the external product and labor markets and, where applicable, they must embrace institutional forces such as unionism, government regulations, and employer associations. Also the rate played by the internal forces - job structure and others - must be understood. These internal influences were discussed briefly in the preceding section. In this section, attention will be focused on the external forces and their influences.

Specifically, it is necessary to examine, in detail, the influence of the external forces if one wishes to understand the system proposed by Dunlop and Livernash. The external forces are examined in terms of their influence in shaping the internal wage structure. To fully understand their influence in contexts with the Dunlop-Livernash scheme, it is necessary to outline the way in which these external forces affect the formation of wage contours and key rates.

A. The Labor Market Influence

Economic theory focuses on the concept of a market. An economy is viewed as a system of interrelated markets, events in any one of which are ultimately conditioned by events in all the others. Markets for productive services (labor markets) are linked by the possibility of alternative uses for the same services, and by substitutability of dif-

ferent services in producing the same output.²⁴ A labor market consists of those forces of demand and supply that establish a single price and the quantity sold of a particular labor service.²⁵ The price of the particular labor service is the wage rate. The market of one kind of labor is related to the market for every other kind by the willingness and ability of workers to change jobs in response to relative wage rates.²⁶

Most labor markets can be defined spatially as local in character. The supply of machinists in Edmonton may not, for example, influence the price of the same in Toronto. For other occupations such as a glassblower or pilot a national market can be identified. Likewise, for certain occupations, an international market may be identified.²⁷ Of the three markets mentioned, the local labor market is likely to be the dominant influence in the determination of wages.

The labor market's strength and the range of its im-

²⁴ Lloyd G. Reynolds, The Structure of Labor Markets, (New York: Harper and Bros., 1951), p. 1.

²⁵ Everett J. Burtt, Jr., Labor Markets, Unions and Government Policies, (New York: St. Martin's Press, 1963), p. 49.

²⁶ Reynolds, The Structure of Labor Markets, op. cit., p. 1.

²⁷ An example would be the professor in the university setting.

pact will depend directly upon the effectiveness of competition and inversely upon the ability of management and the union to enforce non-competitive rates and practices. Or, in other words, the market influences internal wage rates through labor supply. It does so in its dual role as a "source of candidates for jobs and a channel of escape for employees who are actively interested in looking elsewhere".²⁸

The labor market exerts its main force upon internal wage rates through market-oriented²⁹ jobs, that is, jobs that are fairly uniform in duties and vocational requirements as among firms in the local labor market. In this case, candidates as well as incumbents can make some comparison of wage rates and other employment conditions. These market-oriented jobs will be particularly sensitive to the market. An example would be clerical work. This type of labor contains several market sensitive jobs which makes much of the internal salary structure vulnerable to market forces.

The impact of market forces in the skilled craft trades has been greatly reduced by the introduction of effective unionism. The job and wage structure are imposed or influenced by unionism and collective bargaining, not by market

²⁸ Hildebrand, op. cit., p. 274.

²⁹ Market-oriented jobs is term introduced by Hildebrand.

forces. The jobs are union-oriented, not market-oriented. The labor market is sealed off by the union's system of job control, which regulates entry, turnover, and exits throughout the market.³⁰

The influence of the labor market can be better understood if placed in Dunlop's framework of contours and key rates. The market-oriented jobs and union-oriented jobs can be seen as falling into two distinct occupational contours. Both provide some³¹ of the main pillars of the internal wage structure. This is the case for the market-oriented jobs because their rates are extremely sensitive to market conditions. Thus, the market-oriented jobs represent one kind of key job, with a key rate in the structure. They acquire this status because of comparability of work among incumbents in firms, competitiveness of firms for this kind of labor, and the extensiveness of mobility among such workers. Because of these factors, each firm must be cautious of the rates it pays for such positions if it expects to recruit and retain the quantity and quality of labor desired.

³⁰ An excellent account of the impact of craft unions on market forces is offered by Clark Kerr, "The Balkanization of Labor Markets", in E.W. Bakke, C. Kerr, and C.W. Anrod (eds.), Unions, Management, and the Public, (New York: Harcourt, Brace, and Company, 1960), pp. 451-457.

³¹ Other key jobs are determined because of status, product-market factors, and technical factors. Unionism and collective bargaining also play an important role.

Market-oriented jobs are negligible in craft trades, yet quite pervasive in clerical work and in the service industries generally. In factory work, although limited in number, they are quite decisive for certain points³² in the wage structure. Also, the presence or absence of unionism makes a difference but even when it is present the labor market may narrow the range of discretion in wage determination for this kind of key job.

The firm, faced with labor market pressure can forestall raising wage rates mainly by tolerating a decline in labor efficiency and a rise in indirect employment costs. This results from altering the effort spent on labor recruitment,³³ the altering of job content, or reduction of standard or quality of personnel. This approach invites trouble if pursued for a long period of time.

For purposes of wage determination one may regard the rates developed for market-oriented jobs as efforts of the firm to attain an equilibrium wage. This is reached when demand and supply quantities are balanced for the then prevailing conditions. The more effective the competition, the narrower will be the discretionary range within which the rate will be set, and the more uniform will be this rate

³² They have importance in this situation primarily at the hiring level.

³³ L.G. Reynolds, Labor Economics and Labor Relations, (New Jersey: Prentice-Hall Inc., 4th ed., 1964), op. cit., p. 494.

among employers along the same occupational contour.³⁴

B. The Product Market Influence

The concept of the market employed in economic theory outlines two types of markets which are related by the transformability of services into products. One type, the labor market, was discussed in the preceding section. The other, the product market, will be discussed in the following pages.

Product markets are linked by the substitutability of goods in consumer's budgets.³⁵ In a definitive sense, the product market refers to the good or goods (services) produced for sale and the person or persons (market) who want to purchase the said good or service.

The product market exerts its major influence upon wages and employment through the rate of sales and through the sensitivity of the product price to the actions of close competitors.³⁶ The cost price relationship sets the margin of net profit, and so is the prime determinant of survival or extinction.³⁷ Thus, the ingredients of a firm's total unit cost become extremely important factors from a cost con-

³⁴ See Livernash, p. 278; Reynolds, The Structure of Labor Markets, op. cit., pp. 1-2.

³⁵ Reynolds, The Structure of Larger Markets, op. cit., p. 1.

³⁶ Hildebrand, op. cit., p. 278.

³⁷ Ibid., p. 278.

trol standpoint.

The main link between the product market and the internal wage structure is the level of unit labor cost. Given price and sales, the margin of net profit depends solely upon the level of total unit cost of which unit labor cost is a major ingredient. The wages paid, plus the rate of output, labor efficiency, supplemental labor costs, and distribution of work force, affect the unit labor cost. From a wage determination standpoint, the relationship that exists between the job and the unit labor cost is an important one.

Certain jobs, for internal wage structure determination purposes, are cost-oriented. Jobs may be cost-oriented because of employee concentration (assemblers) or because they lie at the center of an occupational planetary system, to which other jobs are closely bound by custom, contract, or technology. Because of their relationship to unit labor cost, the jobs are considered key ones in the wage structure.

The significance of the role of these jobs depends upon the ratio of unit labor costs to total unit costs and upon the state of competition in the product market. The more favorable the cost ratio and/or competitive position, the more flexible the ceiling for the internal structure.³⁸

³⁸ Present in this discussion are two of Marshall's four factors that co-jointly shape the price-elasticity of demand for labor - the ratio of labor to total cost and the elasticity of demand for the product. The other two - ease of substitution of capital for labor (continued)

Thus, where the profit margin is sensitive to changes in unit labor cost, jobs are considered cost-oriented.

Because of their relation to profit margin, the cost-oriented jobs acquire the status of key jobs or key rates in the job and wage structure. The job can be union-and-market-oriented as well as cost-oriented. Also, because of the relation to profit margin, the rate(s) for the cost-oriented jobs cannot be manipulated without seriously affecting the profit margin. Hence, their determination is critical to the total system.

Hildebrand expresses the relationship between the product market and the notion of wage contours in the following manner:

"Cost-oriented jobs involve a special kind of contour of their own. It takes its origin not from the labor market nor from a particular bargaining system, but from competition in the product market. Competition here aligns certain employers in an interdependent relationship where the ratio of unit labor cost to price is critical, even if the firms operate in different local labor markets. Key jobs of the cost-oriented type thus involve close interdependence of wage rates as among firms... Put alternatively, the contour imposes a restraint upon the particular wage rate, exerting thereby a stabilizing effect upon the whole internal structure".³⁹

38 (continued) and elasticity of supply of capital - usually enter over the longer run. For a fuller discussion of Marshall's derived demand consult: L.G. Reynolds, Economics: A General Introduction (Illinois: Richard D. Irwin, Inc., 1963), pp. 104-106.

39 G.H. Hildebrand, op. cit., p. 280.

The product market may impose a different and broader kind of contour beyond that of the cost-oriented influence. Such a contour might contain a group of firms that compete in the same product market and have closely interrelated product prices. An increase in unit labor cost cannot be handled by raising prices because such a move might result in a loss in sales.⁴⁰ Typically what occurs is that these firms act co-respectively to each other when raising product prices and wages. Each tries to stay even with the competition, by holding to a common contour. This behavior is visible in the form of joint bargaining committees, pattern following in wage setting, and association bargaining.

C. Institutional Forces

Institutions and the leadership within these institutions play a dominant role in the shaping of the internal wage structure. Unions, for example, are recognized to have a wage philosophy with strong ethical overtones which insists on certain standards of working conditions, and improvements in these standards regardless of cost. Also recognized is the union conviction that wage pressures operate as energizers of the economic system on the cost side by forcing employers to increase efficiency, and on the income side

⁴⁰ Some reader will no doubt recognize here the presence of the kinked demand-curve hypothesis. For a further discussion of the concept see: C.E. Ferguson, Microeconomic Theory, (Illinois: Richard D. Irwin, Inc., 1969), pp. 312-315.

by expanding consumer markets.⁴¹ Difference in philosophy and style of union leadership abound and can be explained in psychological, sociological, and political terms as readily as in economic terms.⁴²

Although the union as an institution tends to receive the most attention, the employer as an institution also greatly influences the outcome of the wage structure. An employer may be concerned with his status as a wage leader or as a dependable supplier and therefore base his decision more on institutional than economic considerations. The wage leader and his behavior definitely affect the decisions to be made by his allies. Or, several employers may band together in an effort to counteract the influence exerted by the union. But no matter what the approach taken by any one employer, it influences the behavior of the remaining employers.

The third major institutional influence is that of the government. This institution establishes the rough guidelines within which the employer and the union must operate. The wage structure is directly affected by minimum wage legislations, wage guidelines, government intervention

⁴¹ D.W. Belcher, op. cit., pp. 69-70.

⁴² Concepts such as status, power, and authority are useful in describing union behavior. For references see: Robert Dubin, Working Union-Management Relations (New Jersey: Prentice-Hall, Inc., 1964) pp. 1-224. Robert Dubin, "Power and Union-Management Relations" Administrative Science Quarterly, 2 (June 1957), 60-81.

in wage disputes, and any other policing actions required by this institution.

All three of the above play a major role in shaping the internal wage structure. Of the three, unionism has the more pronounced effect on the concepts of cluster and contour. In view of this, it is wise to examine the actual influence of unionism.

Like the labor and product markets, unionism, through collective bargaining, can give rise to key jobs in the internal wage structure and they give rise to a variety of contours. Because of a variety of union bargaining structures, one finds great diversity in contours thus formed. For purposes of this paper it is useful to talk in terms of craft and industrial unions. In the craft trades and industries, the union has lateral orientation, because it organizes by skill and extends its range over many employers, even in different industries. The result is to cross-cut the job and wage structure of each employer in the trade with a lateral stratum embracing its own minute job cluster and wage contour.⁴³ Thus, craft unionism replaces the work of the unorganized and imperfectly competitive labor market, substituting a peculiar market of its own, governed by a system of rules developed by the unions and extended through

⁴³ G.H. Hildebrand, op. cit., p. 282.

collective bargaining.⁴⁴

The product in a craft industry depends upon a cluster of skills. Because of this there may exist a close association between the contours imposed by the union and that derived from the product market. Where both types of contours match in a geographical area, adjustments to their respective impacts upon wage-making becomes a straightforward case of accommodating union-pressure to cost price resistance.⁴⁵ If these contours diverge in geographic range, they can clash seriously posing acute bargaining difficulties.⁴⁶

In an industrial setting, unionism can have still another impact. In this case, the job structure is vertically oriented within the plant, but the union nonetheless has a horizontal interest. This horizontal interest is invoked by the other plants and firms with which it deals. This interest may extend over many product markets. As such, the wage contour that the union desires to enforce upon the employer may be at odds with that defined by the product market. To avoid this, the union has segregated its membership and its policies according to industry lines.

If the industrial union deals with a group of firms

⁴⁴ C. Kerr discusses this point in "The Baikanization of Labor Markets", op. cit., pp. 451-457.

⁴⁵ G.H. Hildebrand, op. cit., p. 282.

⁴⁶ Ibid., p. 283.

which have a common product market, - local, regional, national - the forces of technology and of competitive imitation together will impact considerable uniformity of job structure throughout the group.⁴⁷ It is in this way that certain classifications readily become key jobs. Because of their comparability among firms (bargaining units) in the bargaining contour, they provide an equity standard to the union and its members, so becoming union-oriented jobs. As such, they serve as benchmarks for the larger internal structure, hence as critical points in bargaining issues turning upon equalities and differentials in job-rate relationships, within and among the firms involved.⁴⁸ Certain other jobs, because of technology, function, or custom relations, tend to cluster around these occupations, giving rise in time to strong notions of equitable differentials.

The union also influences the managerial discretion allowed in adjusting to technological or organizational change. Martin Segal,⁴⁹ in a study of 12 unionized manufacturing plants, found that technological change projects two major issues for collective bargaining, both of which affect the internal wage structure. What occurs is a divergence of

⁴⁷ Ibid., p. 284.

⁴⁸ Ibid., p. 284.

⁴⁹ Martin Segal, "Factors in Wage Adjustments to Technological Change", Industrial and Labor Relations Review, 8 (January, 1955), pp. 217-230.

opinion on the results of technological change. To management the change may have decreased the skill and effort required to perform the job, and therefore, according to traditional job analysis, deserves to be paid a lower rate. To the workers and the union leaders, the change will be in all probability, an increase in productivity, thereby justifying a higher rate. Such a situation demands a compromise. Usually the approach employed by management is to weigh the cost of present and future wage concessions, against the costs of immediate resistance. The union, on the other hand, examines such things as the political importance, labor displacement, internal political damage, and the employers competitive position.

Unionism has given added meaning to key jobs (rates) and key job (rate) clusters. As Hildebrand has stated:

"Even without unionism, the key jobs and its associated cluster are natural units from which the design of the internal wage structure must proceed. Where management is free to act alone, it usually will rank its jobs by effort and skill, tying dependent jobs to key rates. Unionism introduces new elements: comparable rates for comparable key jobs among firms, preservation of customary differentials within clusters, the principle of no-cut in job rates even if content changes, and linkage of increases in particular job rates to increases in job productivity regardless of cause."⁵⁰

And the union contributes to greater uniformity of internal wage structures among employing units located along a given bargaining contour. Also, the structure arrived at

⁵⁰ Ibid., p. 288.

through the collective bargaining process will be influenced greatly by the union-management relationship.⁵¹

Although greater emphasis has been accorded the union as an institution, the employer and the government as institutional influences should not be overlooked. The employer, in the absence of unionism, has the final decision in selecting the wage which he will determine his internal wage structure. Granted, his decision is influenced by both the product and labor market. But nevertheless the final say is his. It is in this way that the employer wields a decided influential forces. Also, in the relationship of one employer to another a great deal of influential force can be observed. This was discussed in the earlier part of this section.

In the context of the Dunlop-Livernash scheme, it appears that the determinatness of a particular internal wage structure depends upon the strength of competitive forces in the labor market, the restraint exerted by the product market, upon the nature of the union and the bargaining system (if one is present), and upon the other institutional forces, namely the employer and the government. The preceeding discussion has attempted to explain these influences in relation to the Dunlop-Livernash system and to suggest

⁵¹ Agreement on a structure will be faster if a cooperative relationship prevails; open conflict will typically result in the deterioration of the structure.

areas to which management should look when designing their systems.

3. Summary

This chapter has attempted to outline the system, and the forces influence this system, of internal wage determination offered by Dunlop and Livernash. The system was discussed in terms of its component elements, namely job cluster, key rate and wage contour, and in terms of the environmental influences. In the latter category were includes such as the product and labor market influence, and the institutional - union, employer, and government - influences.

The system suggest that, in determining the internal wage structure, the administrator should proceed in a specific way. Initially, he should attempt to determine what jobs in the organization are more closely related to one another. That is, he should develop a table of job clusters. These clusters, as mentioned in the text of this chapter, would be determined by various factors (see page 49). Once the organizations had been broken down into clusters, the administrator would select the key rate or key rates for each cluster based on predetermined factors (see page 47). These key rates would constitute the building blocks for the remainder of the system.

Upon completion of the steps mentioned above, the key jobs would be compared to similar key jobs in other firms.

The firms chosen for comparison purposed should be selected with the external influences discussed in mind. In other words, the firms chosen for comparison purposes may be in the same product market, labor market, and be organized by the same union. Or, variations of these may occur. The important thing of course is to ensure that the comparisons are meaningful and useful.

Once the wages of the key jobs have been determined, the rates for associated jobs in the cluster are determined. The non-key jobs are compared to the key jobs in a way deemed desirable by the administrator and the rates are determined based on this comparison. This is the final step in the system proposed.

The system is offered as an explanation of the way administrators act in establishing and maintaining their internal wage structures. It suggests an orderly process similar to that designed by wage and salary administrators. That is, it suggests a method that can be employed to evaluate the jobs in any organization. Whether or not such a method is available for practitioners to use is the subject matter of the following part of this paper.

CHAPTER IV

INTERNAL WAGE DETERMINATION - THE JOB EVALUATION SYSTEMS

Introduction

Given the importance of wage and salary administration to management and to the areas of personnel, labor relations, human resources, and welfare, it is ironic that the research and writing on the subject have tended to be of two types: the theoretical labor economics and rather mechanical, 'how-to-do-it' job evaluation. The former was the focus of the preceding chapters of this paper, prime emphasis being placed on the theoretical scheme advanced by Dunlop and Livernash. The latter, job evaluation, will be the main subject of this chapter.

Specifically, this chapter will examine the body of literature that presently exists concerning the topic of job evaluation. An effort will be made to describe briefly the purpose, the history, the elements, and the basic methods of job evaluation. This review will provide the reader with an understanding of the processes employed by the administrator in establishing and maintaining a wage structure. Such a review should allow the synthesis of theory and practice in the internal wage determination field of study to take place. That is, it should allow a comparison of the Dunlop-Livernash theoretical proposal with existing practical methods.

The Purpose of Job Evaluation

Job evaluation is management's answer to the problem of pay inequities. Simply stated, job evaluation is a systematic method of appraising the value of each job in relation to other jobs in the organization. Its general purpose is to provide a measuring instrument which sets forth the relative contribution of jobs in a manner agreeable to all parties. In this way it provides a consistent procedure for establishing and maintaining a hierarchy of jobs and attaching to each job a pay rate commensurate with its status in the hierarchy.¹

One of the prime purposes of job evaluation is the establishment of correct differentials for all jobs in the plant. One author² describes this purpose as follows:

"Ideally, the purpose of internal wage differentials is two-fold. First they should provide adequate supplies of labor, of acceptable quality, for jobs that differ in required skills and experience, in associated responsibilities, and in attendant disutilities. Second they should furnish adequate incentives for high worker efficiency throughout the organization. In purport, job evaluation seeks to achieve these objectives in a systematic fashion--if you wish, by substituting technical standards and uniform procedures for the results that otherwise would be provided by an effectively competitive labour market if one were available."

¹ D. W. Belcher, op. cit., pp. 177; E. J. Bengue, S. L. H. Burk and E. N. Hay, Manual of Job Evaluation (London: Harper & Brothers Publishers, 1941), p. 4.

² G. H. Hildebrand, op. cit., p. 290.

Thus, job evaluation is the prime tool employed by management to establish and maintain an equitable internal wage structure. The process involves both internal and external considerations. Attention must be addressed to all of the internal factors such as skill, responsibility, and so on that influence the determination of just wage. In addition to these, consideration must be given to the forces of a changing labor and product markets, to the objectives of the union, and to technology. Recognition to these two forces--internal and external--has existed for a considerable time. Smith, in his Wealth of Nations, points to these two forms when distinguishing between differences arising "from certain circumstances in the employments themselves", and "from the policy of Europe, which nowhere leaves things at perfect liberty."³

Job evaluation, then, measures relative job worth. The process itself involves a few steps. However, before discussing the actual process and methods available, let us briefly examine the history and origin of this most useful and needed management tool.

The History of Job Evaluation

Evidence of differential compensation may be found from the very dawn of history.⁴ Tribal leaders charged with the

³ C. Kerr and L. H. Fisher, "Effect of Environment and Administration on Job Evaluation", Harvard Business Review XXVIII, (May 1950), p. 77.

⁴ John A. Patton, C. L. Littlefield, and S. A. Self, Job Evaluation. (Illinois: Richard D. Irwin, Inc., 1964), pp. 5-6.

management of economics and practical affairs were conscious of the conditions of equity and fairness. The leaders paid the highest reward to the specialist in their tribe. Similarly, the concept of status entered into the tribal system and further facilitated the differentiation of rewards. Thus, although not called by the same name then, informal job evaluation was being used to distribute rewards equitably.

The concept of job evaluation was most implicit in the just-price theory of wages advanced in the Middle Ages. The theory attempted to explain the wages of a few free artisans and craftsmen on the basis of pre-established status distribution⁵. In this case, emphasis was placed on equity and the tying of wages to status.

The Industrial Revolution and the accompanying age of specialization did much to increase the need for formal job evaluation. Specialization produced intense wage problems for the new industrial employers. The skilled craftsman's job tended towards a high degree of specialization. Each step to greater specialization caused a narrowing in the scope of the skill required. Accompanying the changes in skill requirements were changes in working conditions, physical effort, and responsibility. However, despite these changes, little was done by the employer to recognize them and their effects. This lack of concern on the part of employers resulted in

⁵ D. W. Belcher, op. cit., p. 30.

unequitable differentials.⁶

One of the first attempts at a formal plan of job evaluation was initiated in 1871 by the United States Civil Service Commission.⁷ However, it was not until 40 years later that a pioneering plan for government employees was developed by the Civil Service Commission of Chicago. Simultaneous to the Chicago effort, the Commonwealth Edison Company unveiled a job evaluation program for an industrial situation.

A major breakthrough came in 1925 with the introduction of a method by Merrill R. Latt.⁸ The plan outlined by Latt incorporated fifteen factors or work characteristics, some unnecessary, others unrelated. Although his method, by present standards was amateurish, it did lay the foundation for many of the point plans existing today.

The introduction of job evaluation on a wider scale was encouraged by such organizations as the American Management Association, the National Metal Trades Association, the unions, and particularly the War Labor Board. The latter, through its concern with wage inequities, its permission of wage increases through the introduction of job evaluation, and its approval

⁶ At this period of time, Adam Smith advanced an explanation for wage differentials. Hardship, difficulty of the work, stability of the work, responsibility, and chances of success are factors that influence the wage paid and thus the differential. It is interesting to note the similarity of Smith's analysis to modern day job evaluation.

⁷ J. A. Patton, C. L. Littlefield, and S. A. Self, op. cit., p. 7.

⁸ D. W. Belcher, op. cit., p. 180.

of rate ranges, encouraged job evaluation programs.⁹ The foothold gained by job evaluation during the War spread in peace time and became a popular tool for correcting wage inequities.

Although developed as a solution to the problem of inequitable wage structures, job evaluation should not be regarded as a panacea. Granted, it does provide a solution for many problems and, if properly understood and administered, it can be a strong preventative agent. However, it is best to regard the process as a management tool, a tool that, if properly used, should assist management greatly in determining a fair and equitable wage structure.

In spite of the somewhat bewildering number of plans in effect, there is really only one basic job evaluation approach. This approach, illustrated in Figure IV, calls for the measurement of job duties against a predetermined yardstick in order to assess relative job worth. The quantity measured is job duties. Thus the process is impersonal and has nothing to do with how well the work is performed or the ability, potential, or attitudes of employees. Duties are determined through some method of job analysis--one of the first steps in the total process.

⁹ Ibid., pp. 180-181.

FIGURE IV BASIC JOB EVALUATION APPROACH

Job Duties		Job Evaluation Plan		
determined through job analysis and recorded in job description	measured against	a predetermined and predefined yard- stick designed to measure relative job worth	Yields	Relative Job Worth

The Elements of Job Evaluation

The present basic systems of job evaluation contain five steps.¹⁰ The execution of these steps is required in order to establish the relative worth of the jobs in the enterprise. Simply stated, these steps are:

(a) job analysis--the process of gathering facts regarding the duties and responsibilities of the job along with information concerning worker requirements for successful performance. This information is analyzed and recorded in precise language and is known as a job description;

(b) the determination of the yardstick--this involves deciding on what the organization is paying for, that is, determining what factor or factors place one job at a higher

¹⁰ Ibid., p. 178. Belcher outlines the basic steps and then proceeds to discuss them in detail in the pages following page 178.

level in the job hierarchy than another, and thus at a higher rate of pay. This decision is the core of job evaluation. These compensable factors are the yardsticks used to determine the relative value of jobs;

(c) the determination of the system of appraisal to be used--the administrator can implement any one of the four basic methods (ranking, classification, point, or factor-comparison) or modify these to fit his situation;

(d) the establishment of the job structure--the jobs are evaluated and placed in the appropriate position in the hierarchy;

(e) the pricing question--this step involves the assigning of wage and salaries to the jobs in accordance with their position in the hierarchy.

The execution of these steps varies with the methods of job evaluation. Some methods compare the jobs to a pre-determined scale while others compare the jobs against one another. The method or procedure employed to obtain job descriptions may vary from organization to organization. However, each method does consist of the above five steps and employs them to reach an equitable external structure.

In order to critically evaluate the existing methods of job evaluation, it is essential that an understanding of the procedures in each step is gained. The initial step, that of job analysis, is more than simply collecting a few job facts. Specifically, the process entails the collection of pertinent information relating to the nature of a specific job. This information may be gathered by means of an interview, a

questionnaire, or observation. The pertinent information may be considered of three types: (a) the identity of the job, (b) a complete and accurate description of tasks involved in the job, and (c) a specification of the requirements the job makes upon the worker. The information considered essential to meet the requirements for a complete analysis can be divided into four categories: (1) what the worker does, (2) how he does it, (3) why he does it, and (4) the skill involved in doing it.¹¹

To effectively analyze any job, the analyst must understand the concept of job. The concept consists of two elements: a task and a position. A task is considered to exist whenever human effort must be exerted for a specific purpose. A position is an aggregation of tasks, duties, and responsibilities requiring the services of an individual. Hence, a job is defined as a group of positions which are identical to their major or significant tasks. For example, a clerk-typist in the university setting is a job at which a large group of females are employed.

The information collected during the process of job analysis is recorded in the form of a job description. Common practice appears to be to group the information gathered under the headings: (a) identification of the job, (2) work performed, and (3) worker requirements--basic minimum skills, knowledges, abilities, and responsibilities required. The

¹¹ Ibid., pp. 199-238. The process of job analysis is outlined in Belcher, Chapter VIII.

process, because it forms the base from which evaluations are made, is extremely important. Thus, the more specialized the job analyst, the better.

Step two of the total evaluation process involves determining the compensable factors in the job. The compensable factor(s) that determine the relative worth of the jobs are gleaned from the job information available. This step, because of its impact throughout the total evaluation, is considered to be the most important one.¹² The decision reached in this step not only influences the most appropriate method of comparing jobs but the extent to which equity, as measured by relative contribution is achieved.

Factors, in order to be useful in comparing jobs, must possess certain characteristics. These must be present in different amounts in the various jobs. Only the more important factors should be selected. They must not overlap in meaning otherwise double weighting may be given to one factor. Employer, employee, and union viewpoints should be reflected in the factors chosen and the factors selected must be found in all jobs under study. Difficulty in comparing jobs arises when the factors used do not apply to all the jobs.

The decision as to whether or not one factor or set of factors is applicable to all jobs in the organization is a crucial one. In some cases, it may be necessary to divide

¹² This statement, although not made outright, is implicit in most texts on the subject.

the jobs in the organization into groups or clusters and then to apply a set of factors to each cluster. This has problems in that it is difficult to determine the relationship among the clusters.

In large organization, the key jobs carry the wage-making forces. Since key jobs are related to non-key jobs and to each other, economy of effort suggests employing key jobs rather than all jobs as a source of data for compensable factors.¹³ Because key jobs provide the channel of relationships between job groups, they furnish guides as to whether given compensable factors are useful for job comparisons within and between job groups.

Perhaps early in the process of factor determination it will become evident that no one compensable factor or set of factors applies to all of the jobs in the organization. If this situation arises, it will be necessary to classify the jobs into groups or clusters. This clustering may be done on the basis of departmental ties, skill families, or work crews. The necessity for breaking the structure into narrow clusters for wage purposes will depend on the total organization of the enterprise. The usefulness of such an approach can be better understood if the Dunlop-Livernash concept of job clusters is kept in mind.¹⁴

Unlike the total system of job evaluation, the deter-

¹³ Ibid., p. 231.

¹⁴ The concept of job cluster is discussed in Chapter III of this paper.

mination of compensable factors has received little attention.¹⁵ There exist many ready-made plans that contain the needed compensable factors. But, it is difficult to state, without knowledge of the jobs in the organization, what compensable factors should be used. Some plans, namely the civil service type, suggest the use of the factors of responsibility, job knowledge, mental application, and dexterity and accuracy required as being applicable to all jobs. Other suggest five basic factors such as mental ability, skill, responsibility, physical effort, and working conditions. However, the point is to develop, when possible, a set of factors that apply directly to your situation.

Methods of Job Evaluation

Evaluation plans which are used to translate job duties into relative job worth may take many different forms. Basically, there are four systems, two of which are non-quantitative, and two of which are quantitative. The non-quantitative are the ranking and classification methods; the quantitative the point and factor-comparison methods.¹⁶ These basic types are described in length in the following pages.

Before examining each method, let us examine the

¹⁵ Most of the work on determining factors has been conducted by applied psychologists. For example, see the works of C. H. Lowshe on studies in job evaluation.

¹⁶ Belcher, op. cit., pp. 239-310. The four basic methods are outlined in most texts on wage and salary administration.

principal measuring techniques that have been devised for determining the relative worth of jobs. Essentially, the techniques differ from one another in three areas:

(a) what is measured (the whole job or identifiable elements of it);

(b) how jobs are weighted (whether or not point values are assigned to establish quantitative measures of job value;

(c) how jobs are measured (against other jobs or against a predetermined yardstick.

The differences in the measuring techniques will surface once the basic systems have been reviewed.

The Ranking System

One method of job evaluation¹⁷ is the system which simply ranks one job against another without assigning any point values. The evaluator compares two jobs, one with the other and judges which is more difficult. Once this decision has been made, another job is compared with the first two and a similar decision is made. The process is repeated until all jobs have been ranked from the most difficult down to the least.

The simplicity of the ranking system is its greatest asset. Little preparation is required and the evaluation process is rapid and inexpensive. The ranking system also utilizes job against job comparison. This is the most accurate

¹⁷ A description of this method is found in D. W. Belcher, pp. 241-145; C. W. Lyttle Job Evaluation Methods, (New York: The Ronald Press Company, 1954), pp. 37-40.

method of evaluation because it is far easier to judge which of two jobs is more difficult than it is to judge the absolute difficulty of either.

Unfortunately, the very simplicity of the ranking method is also its greatest weakness. The system does little to guide the judgement of evaluators. Typically, rankers are asked to keep the "whole job" in mind and merely given instructions to rank the jobs. This results in different bases of comparison between raters, and conscious or unconscious influence by such factors as present pay rate, competence of job incumbents, and prestige values of jobs. Similarly, there is a problem in recognizing and comparing similar jobs in different departments. These problems can be overcome by asking raters to rank jobs on the basis of predetermined compensable factors.

In its basic state, the ranking system can only indicate that one job is more difficult than another without specifying in any way how much more difficult. That is, on the basis of the evaluators assessment, one job is relatively more important than another. The system does not have set criterion for determining this relative importance. Again, this problem can be solved by introducing a basis (factor(s)) of comparison.

The Classification System

In the classification system (sometimes called the grade-description method), the job is measured against a predetermined yardstick whose various divisions define overall

job values or difficulty. The evaluators compare each job with the yardstick and slot the job into the grade which best describes its characteristics and difficulty. The primary task is the describing of the classes so that relatively little difficulty in fitting each job into the appropriate grade results.

The major advantages of this method are that (1) many employees and organizations tend to classify jobs, (2) it promotes thinking about job classes among both executives and employees, (3) it is simple to administer and explain to raters, (4) it is flexible, and (5) it is not time consuming.¹⁸

While the system is relatively simple and inexpensive to install and administer, it has most of the shortcomings of the ranking system. The shortcomings are (a) the difficulty of writing grade descriptions, (b) the problem of comparing important factors uniformly, (c) the biased results caused by title, personality, and existing pay rates, and (d) the lack of substantiating data to defend the end ratings to the employees.

One of the more critical disadvantages of the system is the basing of classifications on duties and responsibilities rather than on compensable factors.¹⁹ Writing grade descriptions in terms of carefully selected compensable factors would

¹⁸ D. W. Belcher, op. cit., pp. 244-245.

¹⁹ Grade descriptions written in terms of duties and responsibilities require a decision on whether one duty requiring high skill is sufficient to place the job at a higher level, or whether the duty must occur several times a day, and so on.

largely eliminate this difficulty.

This method, like the ranking method, involves the elements outlined in section IV. After job descriptions have been collected, jobs are classified as to kind. Classes such as clerical jobs, sales jobs, inspection jobs, and so on are used. Then compensable factor(s) to be used in grading jobs are chosen. After this step, grade descriptions are developed.²⁰

Because they place the job into a hierarchy without any attempt to attach numerical values to jobs, the two methods (ranking and classification) are considered non-quantitative. The quantitative methods are discussed forthwith.

The Point System

Under this system, various factors of a group of jobs are selected and defined. A separate yardstick describing different degrees of each is prepared and a job is then ranked against every yardstick. In essence this is the same process as the classification system except that the job is evaluated on a separate scale for each factor and point weighting are assigned.

The type of factor yardstick used in point plans is illustrated in Figure V. In evaluating jobs, the analyst simply studies the job duties and compares them with job yardstick. He then assigns the job the degree which seems to

²⁰ D. W. Belcher, op. cit., p. 246. Belcher gives a detailed account of the process.

FIGURE V EXAMPLE OF DEGREE DEFINITION

Factor: Hazards

Numerical
Classification

Code	Likelihood and Nature of Injury	
A	Accident hazard low and usual injuries consist of minor cuts, bruises, and burns. Operate machines, machine tools, material handling equipment, or control movement of material when only occasionally exposed to moving machinery. Perform repetitive manual tasks, such as feeding or piling product or material.	BASE
B	Accident hazard moderate and probable injuries consist of severe cuts, bruises or fractures such as encountered when performing routine crane hooking, operating tractors and trucks, regularly adjusting moving machinery of product. Exposed to falls such as may occur when walking or climbing over bins, stock buggies, and low scaffolds. Occasionally exposed to hot objects that may cause moderate burns. Exposed to flying objects such as chips and scale. Handle or work near caustic, inflammable or volatile liquids or gases. (Closed vessels or pipes)	.4
C	Exposed to burns from molten metal splashes regularly manipulate hop products with tongs or hooks. Handle or control caustic inflammable or volatile liquids (Open vessels or handling containers). Exposed to falls such as might occur when working on high scaffolds, structures and roofs. Occasionally exposed to high voltage electricity. Exposed to severe injury from crane hooking where difficult rigging or lifting devices are involved. Perform heavy maintenance work involving climbing and rigging to repair, set up, or tear down, equipment and mills. Climb on moving rolling stock.	.8
D	Exposed to severe burns from handling transporting or controlling the flow of molten metal.	1.2
E	Frequent exposure to a hazard where failure to exercise extreme care and judgement might cause an accident which would result in total disability or a fatality.	2.0

Source: D. W. Belcher, op. cit., pp. 272-273.

describe best the extent to which the factor is important. This process is repeated for each factor and the point value of each factor degree are totaled.

Because of its wide spread use, this method of evaluation has countless variations. However, despite these variations, a great deal of standardization may be found in the process involved to develop the method. Because different job groups or clusters will probably have different factors which are deemed important, it is wise, as an initial step to decide on the type of jobs to be evaluated. Observations may show that for organization there should be a plan for each of the shop jobs, clerical jobs, and executive job.

Once the cluster to which the plan is to be tailored is chosen, the steps are similar to those in the two previously discussed methods. Job information is collected from which compensable factors are selected. The factors are then defined and broken down into degrees or divisions as shown in Figure II. This step of defining the factors into degrees, is a most important stage in that it provides the yardstick to be used to measure the jobs in the relevant cluster.

At this stage, the relative values of the factors are assigned. The most widely accepted procedure is to rank the factors in terms of relative importance. This is accomplished by having the committee rank the factors, agree on the overall ranking, and then have each member distribute 100 per cent among the factors individually. Upon completing this step, points are assigned to the factors and degrees. This prepares

the stage for the writing of a job evaluation manual. This manual is used to evaluate existing and new jobs in the organization and may be used for several years without being changed.

The point system has a number of advantages over the less refined ranking and classification systems. The use of fixed, predetermined, and defined factors forces the evaluator to consider the same job elements when rating every job. This provides for a considerable degree in accuracy in judging jobs. Also, the assignment of point values indicates not only which job is worth more than another, but how much more it is worth. Finally, a record of judgements of the evaluation to supervisors and employees alike.

Just how useful a point-evaluation system is in guiding the judgement of the evaluator depends upon the factors which are selected for use and the accuracy of the point values assigned. In addition, there is the problem of establishing the correct number of degrees plus defining each clearly so that they will serve as a meaningful guide to evaluators and also provide an understandable explanation of slottings which have been made.

The Factor-Comparison System

A fourth basic system is factor comparison, in which the various factors are compared simply on a job-by-job basis, without definitions for the various degrees. The system may be thought of as a refinement of the ranking method since jobs are compared directly in both cases. In this method, the

evaluators analyze and rank all jobs in terms of one factor, then rank all in relation to a second factor, and so forth until rankings have been established for each of the factors used. In order to accomplish this job-by-job comparison, a job comparison scale consisting of key jobs is first constructed.

Specifically, this method begins like the others by analyzing jobs, writing job descriptions and specifications. Information may be collected on all jobs, or at this stage, only on key jobs.²³ The information is recorded in terms of the five factors usually used with this method--namely mental requirements, physical requirements, skill requirements, responsibility, and working conditions.²⁴

Following the collection of pertinent job information, key jobs are selected and ranked according to the five factors used. Members of a committee are asked to rank the jobs several times to solidify their judgement. Then a meeting is held at which an agreement is reached concerning the position of the various key jobs in the total comparison scale being erected.

²³ In this method, a key job is assumed to carry correct rates of pay and should (1) represent the complete range of jobs, (2) be numerically important, (3) be those traditionally used in collective bargaining, (4) be well known, (5) be relatively stable in job content, (6) be good reference points in job structures as to level of difficulty and responsibility, and (7) be susceptible to clear concise description. (See D. W. Belcher, op. cit., p. 108).

²⁴ These factors are considered universal by the authors of the method. (See E. J. Benges, S. L. H. Burk, and E. N. Hay, op. cit., pp. 41-143.).

In the next step, the committee members are asked to divide up the present wage being paid on each key job among the five factors, in accordance with their judgement as to the importance of the factors to the job. For example, if the present wage for a common laborer is \$1.96, this might be divided as follows:

Mental Requirements	\$.21
Physical Requirements	.73
Skill Requirements	.24
Responsibility	.18
Working Conditions	.60
	<hr/>
	\$1.96

This distribution of the present rate is made for each key job.

Upon completion of the above step, the ranking judgements are compared to the pay divisions judgements to check as to whether or not the two have been assigned the same position. For example, if in the ranking of difficulty the job of a laborer is placed as follows:

Mental Requirements	15
Physical	5
Skill	15
Responsibility	11
Working Conditions	2

then the money rank for a laborer should be the same if the job is to be considered a key job. For example, if the factor of working conditions is ranked second, then .60 cents should be second in ranking. Thus one develops a grid for all of the rated jobs in order to check their suitability as key jobs.

From the above, a job comparison scale can be developed. This scale is used then to evaluate the remaining jobs in the organization. The scale may be used for several years without changes being made in it.

This method has two basic advantages. First, it uses the job-by-job comparison technique. Second, it does not involve the problems of semantics encountered in building factor yardsticks, since the various degrees do not have to be defined. However, because of the lack of definitions, the results of evaluation under the factor-comparison system are more difficult to explain to employees or to supervisors who question the classifications. Other disadvantages arise because of the difficulty of choosing a key job, the complexity of the system, and the possible bias resulting from the use of existing wage rates.

Summary

The heavily descriptive material in this chapter was intended to present a rough, basic outline of the avenues followed by management in determining their internal wage structure. Emphasis has been placed on the "how-to-do-it"

aspect wage determination, especially in terms of establishing the structure (job).

A simple outline of the differences in the four basic methods is present below in Figure VI. As this figure indicates, the major differences lie in the method of comparisons and methods of analysis used.

Also, the steps involved in the four basic methods are outlined in Figure VII. This figure shows that although there are common elements in each system, differences do exist.

Although reference has been made to four basic methods, it should be realized that many variations of these methods can be used. The method employed by an organization may be a ready-made one or tailor-made. The latter seems more desirable in view of the fact that it allows the management to determine its own compensable factors which may be important only in their organization. Thus, without knowing something about the organization, it is difficult to recommend one system over the other. However, it is possible to evaluate each system in terms of its proximity in approach to that suggested by the Dunlop-Livernash scheme. That is, the review in this chapter has provided enough of the practical "how-to-do-it" side to enable the examination of the Dunlop-Livernash scheme in terms of a practical workable system.

The following chapter will attempt to compare the methods discussed here in with the scheme discussed in Chapter III. The advantages and shortcomings of the job evaluation systems in terms of implementing the desired scheme will be outlined. This will provide a sound basis from which to make recommendations.

FIGURE VI

BASIC SYSTEMS OF JOB EVALUATION

Measuring Techniques	Ranking	Classification	Point	Factor-Comparison
What is measured?	Overall job	Overall job	Elements of factors of job	Elements of factors of job
How measured?	Job against job	Job against scale	Job against scale	Job against job
How weighted?	No point values	No point values	Point values assigned	Point values assigned

FIGURE VII

AN ILLUSTRATION OF THE STEPS INVOLVED IN THE BASIC METHODS OF JOB EVALUATION

Steps	Ranking	Classification	Point	Factor-Comparison
1	Obtain job information	Obtain job information	Determine types of jobs to be evaluated	Analyze jobs: write job descriptions and specifications
2	Select raters and jobs to be rated	Separate jobs by type	Obtain job information	Select key jobs
3	Rank jobs	Select compensable factors	Select compensable factors	Rank key jobs by factors
4	Combine ratings	Develop grade descriptions	Define compensable factors	Distribute wage rates by factors
5	Combine departmental rankings	Classify jobs	Define factor degrees	Compare steps 3 and 4
6			Determine relative values of factors	Construct job comparison scale
7			Assign point values to factors and degrees	Use the job comparison scale
8			Write up job evaluation	
9			Rate jobs	

CHAPTER V

DISCUSSION AND RECOMMENDATIONS

A General Overview

The establishing and altering of the internal wage structure is but one of several problems which confronts the wage and salary administrator of any organization. Typically, the wage administrator must be aware of the effect that his decisions concerning wages and wage relationships will have on worker morale and the general area of employee relations. He must determine what wages shall be offered and what the relationship between wages shall be. In making his decisions, he has to ensure that the organization will be able to recruit and retain competent employees and motivate these employees. In essence, the wage structure developed must contain both equalities and differentials if life in the organization is to be relatively pleasant.

The problems of the level of wages and the relationships between individual wage rates have been addressed both by economist and by students of the art of business administration and collective bargaining. The results of the former have been in the form of theoretical schemes while those of the latter have consisted primarily of mechanical, "how-to-do-it" job evaluation systems. The research that has been conducted in the past two decades, although based more

on empirical research than abstract concepts, can be slotted into these two categories. Also, the research conducted in both areas has tended to be complimentary in nature. The reason for this gradual convergence of theory and practice is the increased concern of labor economist with the influence of institutional and behavioral factors. But, the theoretician and the business administrator have not lost sight in this convergence of the basic problem, that of an equitable system of wage differentials.

Interest in wage differentials dates back to the middle ages and to the just price theory.¹ But it was not until 1750 that a theory of wage structure was advanced by Adam Smith. Smith suggested that wage differences were based on factors such as skill requirements (training included), working conditions, responsibility, regularity and location of employment, and so on. If examined closely, the reader will note the similarity of his analysis and evolved factors to modern day job evaluation.

Although the topic of wage structure received prime attention in 1750, it did not receive a similar amount of attention during the next two centuries. Rather, wage structure was discussed, at best, as an off shoot of discussion on general wage theory. And it was not until the

¹ The just price theory attempted to explain wages on the basis of pre-established status distribution. Equity and the tying of wages to status was a major concern.

1940's that the economist, hesitant to accept the marginal productivity theory as an explanation of wage structure, revived interest in the area of wage structure analysis. The renewed interest in wage structure resulted from attempts by these disenchanted economists to build a theory that accomodated observed wage determination processes and institutions.

At the same time as the economists were considering the problems of internal wage structure, the business administrators and students of collective bargaining were busy developing systems that would be implemented to ensure an equitable internal wage system. Although "how-to-do-it" plans had been developed, few companies ascribed to the new methods. But the War Labor Board, through its concern with wage inequities, its permission of wage increases through the introduction of job evaluation, and its approval of rate ranges, encouraged job evaluation programs.² This encouragement seemed sufficient to ensure the continued use of job evaluation as a solution to the problem of structure.

Although several theories have been advanced by labor economists to explain wage differentials,³ the most elaborate theoretical scheme has been offered by Dunlop and

² D. W. Belcher, op. cit., p. 180-181

³ These theories have been advanced by authors such as: R. A. Lester, op. cit., pp. 483-500; G. W. Taylor, op. cit., pp. 83-113; M. W. Reder, op. cit., pp. 69-70.

Livernash.⁴ The structure of wage rates within a company, industry, or industries is conceived of as a balanced system. The system contains three basic elements: job clusters, wage contours, and key rates. The concept of job cluster is considered to be the basic building block in internal wage determination. Basically, a job cluster is a group of job classifications or work assignments within a firm that are linked together by technology, or the administrative organization of the production process, or social custom. As a group, the jobs have common wage making characteristics. In the cluster there is a key job or several key jobs plus a group of associated jobs. The key job is the focus of the wage making forces. A job to be a key one must fulfil certain criteria such as: stability of job content, standardized among firms, importance to and dominance in the cluster, and other lesser criteria.⁵ The other concept, wage contour, is analagous to the concept of job cluster and, for purposes of this study, of lesser importance. However, a detail description of it is provided in an earlier chapter of this text.⁶

A review of the Dunlop-Livernash scheme shows that it does offer a meaningful description of how to establish

⁴ This scheme is discussed in depth in Chapter III of this thesis.

⁵ These criteria are outlined in Chapter III.

⁶ See Chapter III.

and maintain an equitable wage structure. On a theoretical level, they have suggested a way in which equalities and differentials in job rates in an organization can be established. But, their work cannot be regarded as a theory because it does not fulfil all the requirements of a theory, namely the requirement of predictive ability. This, however, does not mean that their work is insignificant. Rather, they have pointed out the importance of numerous variables in the process of internal wage determination and the impact of the variables on the end results. As such, they have constructed a highly descriptive model to explain the process of internal wage determination.

While the labor economists have been trying to construct an appropriate theory of wage structure, the students of business administration have been busy altering existing systems of job evaluation. No original or new methods of job evaluation have appeared on the wage determination scene since the introduction of the factor comparison method in 1941.⁷ Instead, much of management's efforts have been directed toward fitting the existing basic systems, in altered or combined form, into their organizations. And in many cases, consultants have been

⁷ This method was developed by E. J. Bengt, S. Burk, and E. N. Hay, *op. cit.*, pp. 1-195. The point method was developed in 1925; and the classification method and ranking methods have earlier histories. Since 1941, modifications to the existing systems have been made. The major contributions have been made by E. N. Hay.

asked to install a particular system, always an off shoot of one of the four basic ones.

Job evaluation is the process used by management to reduce, and hopefully eliminate the problem of pay inequities. It is regarded as a systematic method in which the value of each job in the organization is appraised in relation to the other jobs. With the assistance of a constant measuring instrument, a consistent procedure for establishing and maintaining a hierarchy of jobs and attaching to each job a pay rate commensurate with its status in the hierarchy is provided. This, in essence, is the device through which the theoretical scheme of Dunlop and Livernash becomes operationalized. The question is: Do any of the existing basic methods employ the concepts outlined in the Dunlop-Livernash scheme? By means of comparative analysis, the answer to this question can be achieved. Therefore, in the following section, the basic methods and their procedures are reviewed and examined to see whether or not they have used, either implicitly or explicitly, the concepts of cluster and contour.

Analysis of the Basic Methods

The analysis to be undertaken in this section involves examining each of the four basic job evaluation methods - ranking, classification, point, and factor comparison - to see if any one of them adequately

translates the Dunlop-Livernash system into operational terms. To carry out this type of analysis it is necessary to sketch briefly the steps in each basic system as well as the concepts of the scheme. The latter was discussed briefly in the previous section of this chapter. It should be noted, however, that Dunlop-Livernash suggest that jobs be grouped into broad and narrow clusters and from these clusters key jobs should be isolated. These key jobs become the focal point for external wage comparisons as well as internal wage comparison. And the non-key jobs in each of the narrow clusters should be compared to the key job or jobs in that cluster. Their scheme implies the use of job to job comparisons, not jobs to a predetermined yardstick. With the above in mind, an examination of the ranking method, followed by the others, will be made.

In the ranking method, jobs are compared to one another. The usual procedure in this method is to rank jobs by departments or sections. For example, all jobs in the purchasing department would be compared on the basis of one or a few compensable factors. The rater would likely place the purchasing agent job at the top followed in order by the senior buyer, junior buyer, expeditor, and clerks. Because of the large number of jobs in an organization, several raters are required. Once each rater has ordered the jobs in the departments he has been assigned, a committee of the raters are required to

combine the rankings. From this step, there evolves a number of grades of jobs. These grades may then be carefully defined to permit evaluation of new or revised jobs. If this is done, the ranking plan, in actual operation, becomes a classification system.

From the brief outline above,⁸ it is apparent that the ranking method contains none of the elements in the Dunlop-Livernash scheme. Jobs are compared one to another within departments but not in accordance with the concept of job cluster. Key jobs are not chosen in each department and then all other jobs compared to them. Nor are attempts made to divide the organization into clusters of jobs with common wage-making characteristics. Thus, the concept of job cluster is totally unfounded in this method and, because the two are interdependent, likewise the concept of wage contour. It is not difficult, therefore, to conclude that the ranking system of job evaluation is not a method that can be used to make the Dunlop-Livernash scheme operational.

The classification or grade-description method compares the jobs in the organization against a scale. In this method a number of classes or grades of jobs are defined and then jobs are placed into the classes that best describe them. In setting up the system, a number of steps are involved.

⁸ For a more complete discussion of the method, see Chapter IV.

First job information is collected and jobs are analyzed. From this, job descriptions and job specifications are prepared. After the job information has been collected and analyzed, the jobs are divided into specific groups such as sales jobs, clerical jobs, maintenance jobs, inspection jobs, and so on. These groupings are based on such things as relatedness of task, skill family, departmental function, or work crew. In this way, the jobs in the organization are grouped so that jobs with common wage-making characteristics are in one cluster.

The third step involves selecting the compensable factors. One factor may be used or several. In the complex classification systems, four factors are commonly used. These are skill, effort, responsibility, and working conditions. After reaching agreement on the compensable factors, grade descriptions are developed. The descriptions are written so as to describe each class in terms of amount or level of compensable factor(s) present in each job. For example, there may be four classes or descriptions in the clerical cluster. These four would describe the differences between a junior clerk, intermediate clerk, clerk, and a senior clerk.

The completed grade descriptions provide the scale against which jobs can be compared. Job information on new or changed jobs can be gathered and then compared to the descriptions provided for the classes in that cluster. In this way, jobs are slotted into the proper shelf of the

total system.

On first glance, it would appear that the above system does make use of the concept of job cluster. The system does arrange jobs into narrow clusters on the basis of predefined criteria. But, it can be seen that these clusters do not have the same ingredients as Dunlop-Livernish suggests. Nowhere is it stated or implied that some jobs in the cluster are more important and are the linking pins for the internal and external wage structures. That is, key jobs are not considered an integral part of the systems make-up. Similarly, the Dunlop-Livernash scheme suggests that some jobs are more closely related as to wage significance than others and while such job relationships have no simple, single basis, the larger relationships develop around key jobs. In other words, the non-key jobs in the cluster are compared to the key jobs, a situation that does not occur in the classification method.

Since the key job ingredient is missing, the concept of wage contour is also absent. Key jobs of various forms, it will be recalled, make-up the wage contour. Granted, information may be gathered by those using the classification method from wage contours to which they logically belong. However, this is by design which does not conform to the notions set forth by Dunlop and Livernash.

With the point method, like the classification system, jobs are compared indirectly through a written scale. For evaluation purposes, a job is broken down into several com-

pensable factors and given a score on each of these factors, the sum of which equals the point value of the job. In establishing this system, there are several steps that must be followed. First, the types of jobs to be evaluated must be determined. This suggest that the jobs in the organization are grouped into broad cluster - clerical, shop, executive - even before the jobs are examined. One of these clusters is selected and a plan developed for evaluating the jobs in the cluster.

The above step is followed by job analysis which is essentially the same process described in the classification method. Information is collected and recorded on every job in the broad cluster. From this information, compensable factors are selected. And after the compensable factors have been selected, job information may be reported on job specifications in terms of these factors.

The next two steps in the formulation of this system are crucial. The factors chosen must be accurately defined and these definitions broken up into divisions of degree.⁹ This allows the raters to adjudge the amount or level of a factor existing in a job. Once the factors are set up, relative values are assigned to each one. For example, if a total of 500 points is to be distributed among five factors, in all likelihood the factors will be assigned varying points.

⁹ An example of this is provided in Chapter IV.

The factor of "know-how" may receive 200 points and the factor of working conditions only 100. Such a division implies that one factor is considered to be twice as important as the other. These points, that is, the total points for each factor, are divided among the degrees of the factor. Once this step is completed, a job evaluation manual can be written. This yardstick is then used for rating new and changed jobs. Jobs, taken in any order are compared to the scales or degrees of factors previously determined.

The above system divides the organization into broad clusters. In fact, it is on this basis that the system is formulated. The originators of this plan appear to have recognized the fact that different large groups of jobs in the organization may have to be evaluated on the basis of factors common only to that group. But, the system, in terms of the Dunlop-Livernash scheme, breaks down after its forceful start. The broad clusters are not divided into narrower clusters. Likewise no mention is made of the importance of key jobs and their relationship to non-key jobs and the external environment. Rather, jobs are compared to the predetermined yardstick and slotted into their appropriate stall. Also the jobs chosen for market comparison purposes are not selected by means of the Dunlop-Livernash key job criteria. Typically the jobs chosen are merely 'benchmark' jobs in the organization. This is completely at odds with the method suggested by Dunlop-Livernash and, as in the other two methods, the notion

of key rates in terms of wage comparisons is nowhere mentioned. On this basis, it is fair to conclude that this method does not provide the administrator with the required tools to implement the Dunlop-Livernash scheme.

The fourth basic method of job evaluation - factor comparison - compares jobs by making judgments concerning which job contains more of certain compensable factors. Jobs are compared to one another one factor at a time. But, and this is a unique feature, a job comparison scale is constructed by passing original judgments on selected key jobs. The initial step in this system is to collect job information, analyze it, and prepare job descriptions and job specifications. It is possible to prepare the latter at this stage because the system advocates the use of five "universal" factors.¹⁰ With the above information available a committee will select 15-25 key jobs. These jobs should be numerically significant, relatively stable in job content, reasonably standardized among firms, be relatively easy to define precisely, and representative of the other jobs in the organization.

The importance of the above step - key job selection - should not be overlooked since the whole system is based on these jobs. If the key jobs are not truly significant and representative, then the whole system may be less than desirable.

The key jobs are ranked by a committee in terms of the

¹⁰ The five are mental requirements, physical requirements, skill requirements, responsibility, and working conditions. These were developed by Bengé, Burk and Hay.

five factors previously outlined. The committee is asked to rank the jobs several different times to solidify their judgments. After agreement is reached on the ranking by factors, the wage rate for each key job is distributed among the five factors. If the ranking given in terms of job difficulty does not match the ranking in terms of money, then the validity of the job as a key one is questioned. In later adapted methods, a percentage basis has replaced the distribution of existing wage steps.¹¹

The final step involves the construction of the job comparison scale. The basis for the scale is the correct money distribution to true key jobs by the previous step. In some cases, however, the money values are multiplied by a constant, a computation which results in point values. The scale is now available for evaluating the organization's jobs. Several supplementary key jobs may be chosen and slotted into the scale, thereby checking the original scale. And the remaining jobs are compared to the scale one factor at a time by first reading carefully the job information on the job and then comparing it with job information on jobs in the scale.

The above method, by design, was discussed in greater

¹¹ In this method, % points are assigned to the vertical rankings. And the horizontal money rankings are translated into percentages. The remainder of the system is the same. For a further discussion of the method see: William D. Turner, "The Per Cent Method of Job Evaluation", Personnel (May, 1948), pp. 476-492; "The Mathematical Basis of the Per Cent Method of Job Evaluation", Personnel (September, 1948), pp. 154-160.

detail than the previous three systems. This seemed advisable since this method uses the notion of key jobs. And in order to determine whether or not the process did fulfil the requirements set out in the Dunlop-Livernash scheme, it was necessary to examine the make-up of the system in a detailed manner.

The above method does not fulfil or operationalize the concepts outlined by Dunlop and Livernash. The method is applied to the total organization. That is, the five factors are deemed representative of all jobs whether they be clerical or executive in type. There is no attempt made to divide the jobs into clusters and to identify the key rates in each cluster. Instead, a number of jobs (15-25) ranging from the clerical level to the management level are chosen and these are considered to be the key jobs. The key jobs selected in this way are not the same as those suggested by Dunlop and Livernash.

To evaluate the degree to which the concept of wage contour is implied on this method is somewhat difficult. The jobs considered key jobs in the method are, along with other jobs, used for wage comparison purposes. This relays the impression that this concept (wage contour) is not being applied as suggested.

Although the factor comparison method is inadequate as a vehicle to implement the Dunlop-Livernash scheme, it does provide a base from which to develop a more representative method. Similarly much can be gained from understanding the other three methods. Taking parts of each of these

systems, a sound and reasonable approach to internal wage determination which implements the Dunlop-Livernash scheme can be developed. This approach is outlined in the following section.

Recommended Approach

Dunlop and Livernash have pointed out that, for internal wage structure determination, we have to distinguish job clusters or job families. Simply defined, a cluster is a group of jobs with related contents. At first sight, it would appear that jobs within a cluster could be classified with little, if any, difficulty namely because the requirements for jobs within each cluster, must by definition, be comparable. But problems of comparability arises between clusters. The solution offered to this problem is found in the concept of key jobs. The key jobs act as linking pins for the numerous clusters and as "agents" in the external environment. These jobs, by definition, are comparable with jobs on the market place. As such, they can be expected to carry the appropriate wage rate and can therefore provide the skeleton for the job evaluation system.

With the above information in mind along with an understanding of the existing systems and their shortcomings, a slightly new approach of job evaluation is recommended. This approach combines some parts which are common to the existing systems with several new features. The procedure is outlined in the following section.

Initially, information pertaining to all jobs in the organization should be gathered. The person or persons responsible for collecting the information should decide beforehand on what information is required. The information should fit into three categories: identification, work performed or duties, and worker requirements. The information to be fitted into these categories can be gained in several ways. The most useful way is to (a) have the worker prepare a job description, (b) have his immediate superior check it, and (c) have the job analyst interview both the worker and the supervisor. On the basis of this approach, the analyst will be able to record, with reasonable accuracy, the information required to describe the job in question. This then becomes the material reported in a job description. These descriptions normally include identifying data and job content and scope.¹²

In the next step, the jobs in the organization are grouped according to job content. This is achieved by analyzing the organization structure and job information collected in step one. By means of this analysis, broad and narrow job clusters may be identified. Depending on the organization, its purpose and structure, it may be evident that jobs should be grouped into broad categories such as executive, factory, and clerical. Within these broad clusters,

¹² This step is the same as that used in the point-system.

narrower ones may be identified. This identification may be made on the basis of departmental ties, skill families, related types of work, or closely knit workgroups. These criteria should be defined and well understood by the committee. For best results, the breakdown into narrower clusters should be agreed upon by a committee. This committee should be made up of representatives from each broad cluster and from the wage and salary administration department.

Upon completion of the above step, the narrow clusters should be carefully examined and one of a few key jobs should be identified in each. This should be agreed upon in committee. To be a key job, a job must fulfil certain criteria. These criteria may be listed as:

- (1) stability - the job must be relatively stable in job content;
- (2) standardization - the job must be relatively standardized among firms. The inference here is that the job must consist of substantial numbers in the labor market thereby facilitating good cross-comparison. Also the job may be easily identified and defined. Should be those traditionally used in collective bargaining;
- (3) representative - the job chosen must be representative of other jobs in the cluster. Ideally they should be few in number but give maximum coverage;
- (4) status - they are usually the more dominant and

important jobs. The importance of this step cannot be overemphasized since the total system rests on these key jobs. The narrow clusters with their key rate(s) are the building blocks of the whole internal system. A poorly constructed or chosen block may well mean a weak structure.

In step four, the compensable factors or the factors that determine the relative worth of jobs are chosen. The decision reached here is all important because it influences the choice of methods of comparing jobs and the extent to which equity, as measured by relative contribution is achieved. To reach an appropriate decision, the committee should deal with each broad cluster separately. Taking one broad cluster, the committee members should examine the descriptions of the key jobs within the narrow clusters. In this way a decision concerning what the organization is paying for may be reached. The factors chosen become a basis for job comparison and the writing of job specifications. To supplement this judgmental approach, it would seem reasonable to suggest focusing attention on present wage differentials among key jobs and searching for factors that would serve to explain these differentials.

The stage is now set for erecting a 'skeleton' for job comparison purposes. Once again, this is applied to each broad cluster. The key jobs are now ranked by a committee on the basis of the factors selected. Each job is ranked separately on each factor. At least two rankings

should be done by each member, preferably a few days apart. Upon completion, the committee should consolidate their rankings which should be entered onto a master ranking sheet.

The persons on the committee should now determine the relative value of the factors. The decision can be reached statistically¹³ or by committee judgment. For purposes of this approach, the latter is most acceptable. Committee decision provides a relative weighting that is considered equitable and hence acceptable. The process involves having the committee members rank the factors in order of importance after having studied them in detail. The ranking should be done in terms of 100 percent.

The factors should be assigned, at this stage, a point value. If there are five factors and a total of 500 points, these points should be divided among the factors in an amount equal to the percentage determined in the previous step. That is, if one factor was considered to be 35%, then it should receive $35 \times 500 = 175$ points total. And this is carried on until the point totals are available for all factors. These points should be arranged in a scale for each factor, the difference between the points being 15 percent. The 15 percent is based on "Webers Law" as applied to

¹³ This approach is mentioned by Belcher.

job evaluation by Hay.¹⁴ For example, if one factor was assigned 200 points, these 200 points could be divided into 25 intervals or steps. The list of numbers below show the intervals from 7-200. The intervals represent differences of 15% calculated from the number 200 down. For case of administration the resulting figures have rounded off.

200	76	25	8
170	65	21	7
145	55	18	6
123	47	15	5
105	40	13	4
89	34	11	
	29	9	

The above provides a point scale for each factor.

The committee now ranks the jobs in terms of the point values, the job being ranked highest receiving the highest number of points but not necessarily the maximum. The committee should read the descriptions of two jobs and then analyze each one

¹⁴ Webers Law states that: In any given kind of perception, equal relative (not absolute) differences are equally perceptible. According to Hay, experimental evidence shows that this law applies to job comparison and that "just noticeable differences are 15 percent. As references, see E.N. Hay, "Characteristics of Factor Comparison Job Evaluation", Personnel (May, 1946), pp. 370-375; "The Profile Method of High-Level Job Evaluation", Personnel (September, 1951), pp. 162-169; "The Application of Weber's Law to Job Evaluation", Journal of Applied Psychology, (April, 1950), pp. 102-104.

for each of the components separately. Using the factor of knowledge as an example, the following procedure should be followed:

- (a) if you see no difference in the knowledge requirements of two jobs, they are the same;
- (b) if you think you see a difference after thorough study, the magnitude of the difference is probably one step (15 percent);
- (c) if you are sure you see a difference after thorough study, the magnitude of the difference is probably two steps (35%);
- (d) if you see a difference clearly without having to study the jobs carefully, the magnitude of the difference is probably three steps (50%).

Differences greater than three steps can best be determined by comparing a chain of jobs where the differences between any two jobs are not more than three steps.¹⁵

The next step in the process is to reach an agreement on the ranking of the key jobs and their point values. The original ranking by difficulty can be compared to the point ranking. Differences will be readily identified. These can be discussed in committee and an agreement reached. These differences, however, should be few in number. At this point,

¹⁵ These requirements are suggested by Hay. See E.N. Hay, "The Profile Method of High-Level Job Evaluation", op. cit., p. 165.

a job comparison scale can be constructed.

In the final step, the remaining jobs in the broad cluster are evaluated with the aid of the job comparison scale. The narrow clusters become the focus of attention. The non-key jobs in each narrow cluster are identified and then compared to the key job(s) for that cluster. These non-key jobs can be assigned points as a result of their comparison to the key job. In this way, all jobs in the organization will be placed in the appropriate, relative positions.

An Example

The jobs in Company A have been grouped into three broad clusters. One of the broad clusters - cluster X - has been chosen for job evaluation purposes. Cluster X is broken down into 7 narrow clusters in which there are 12 key jobs. These key jobs have been chosen on the basis of the criteria outlined in the third step of the recommended process. A job description exists for each key job. A committee is now asked to rank these key jobs on the basis of five factors, one factor at a time. The factors chosen are mental requirements (M), skill requirements (P), responsibility (R), physical requirements (P), and working conditions (W).

The key jobs were ranked one factor at a time. The left hand column entitled Ranking positions shows the rank numbers, a higher number signifying a greater importance or

value of a job with respect to the factors in question. The remaining columns contain the job numbers.

TABLE 1 RESULTS OF RANKING 12 JOBS

Ranking Position	M	S	R	P	W
12	11	11	11	3	2
11	6	6	12	1	3
10	3	3	5	7	10
9	12	12	6	10	5
8	9	9	9	8	1
7	8	7	3	12	7
6	1	8	2	2	8
5	5	5	1	11	12
4	4	1	8	5	6
3	7	2	7	6	9
2	2	4	4	9	11
1	10	10	10	4	4

The preceeding table is a record of the final ranking of all key jobs on the basis of one factor at a time.

The next step is to decide upon the relative value of the five factors. Again, the committee is asked to rank the factors in terms of their importance and to assign a percentage figure to each factor, the totals of which must not exceed 100 per cent. In this hypothetical example, the following breakdown was agreed upon:

Mental	= 30%
Skill	= 25%
Responsibility	= 20%
Physical	= 15%
Working Conditions	= 10%

The committee agreed that the total number of points should equal 1000. Thus, the five factors would receive 300, 250, 200, 150, and 100 points respectively. These total points are then spread out over 15% intervals beginning with 300, 250, 200, 150, and 100 respectively, to form a range of points for each factor. The scales are presented in Table II.

TABLE II RANKINGS OF 12 JOBS ON POINT SCALE

M	(r)	S	(r)	R	(r)	P	(r)	W	(r)
300		250		200		150		100	
255		212		170		128		85	
217		180	11	145	11	109		72	2
184	11	153	6	123	12	93	3	61	3
156		130		108	5	79	1	52	10,5
133	6	110	3,12	89		67		44	1
113	3	94		76	6	58		37	7
96		80	9	65		49	7,10	31	
82	12	68	7	55	9	42		26	8
70	9	58	8	47		36	8	22	12,6
60	8	49		40	3	31		19	9
51	1	42	5	34		26	12	17	
43		36	1	29		22		14	
37	5,4	31		25	2,1	19	2	12	11,4
31		26		21		17	11	10	
26	7	22	2	18	8	14	5,6	9	
22	2	19		15		12	9	8	
19	10	17	4	13	7	10	4	7	
17		14		11	4	9		6	
14		12	10	9	10	8		5	
12		10		8		7		4	
10		9		7		6		4	
9		8		6		5		4	
8		7		5		4		4	
7		6		4		4		4	

Note: M, S, R, P, and W refer to the compensable factors. The numbers found in the column r represent the ranking of the jobs. For example Job #11 received 184 points on the factor Mental Requirements.

The raters are now asked to rank all jobs, one factor at a time. The rankings are shown in Table II.

Close examination of the above table shows that the rankings (r) correspond to the rankings on Table I. The total points for each job can be arrived at totalling the number of points assigned a job in each factor. For example, job #11 has a total of $185 + 180 + 150 + 19 + 16 = 550$ points. Totals can be arrived at for other positions.

After this stage is completed, the non-key jobs are compared to their 'father' key job. For example, the non-key jobs that are in the same cluster as the key job #11 would be compared to #11 and ranked on each factor relative to #11. If the non-key job were considered to require more skill, mental ability, and more responsible, but the same requirements on the other two factors, it might receive $216 + 212 + 175 + 19 + 16 = 635$ points. These judgments are based on the requirements set out in the section on Recommended Approach.

The final result would be the relative ordering of all jobs from lowest to highest, in terms of the compensable factors. The key rates would be used for wage survey purposes and wage scales established.

Conclusion

In this chapter, an attempt has been made to outline the basic steps that should be followed in order to implement the Dunlop-Livernash scheme of internal wage determination.

An effort has been made to steer away from complex statistical procedures that have, in the past, been difficult to use and to explain to the employees of a firm. In place of this, one finds reliance being placed on committee judgments, the belief being that committee judgment is most acceptable. It allows various members of the organization to participate in a plan that is going to affect both them and their employees.

The approach recommended combines parts of the existing systems with several new features. The most important step in the plan involves the identification of narrow clusters and key jobs. The system is based upon the identification of these. The key jobs become the focal point for internal and external wage determination. They are indeed the fathers of the internal system. Once determined, the process of evaluation adapted is reasonably flexible. It has been suggested that a ranking method similar to that in the factor comparison system be used.

The major difficulties with this method lie in the actual identification of narrow clusters and key jobs. And once these are identified, establishing the relationship between the clusters requires careful attention. Similarly, it is not easy to identify the compensable factors. Again, it is a matter of relying on committee judgment. This judgment should be based on a thorough knowledge of the job information collected early in the process.

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